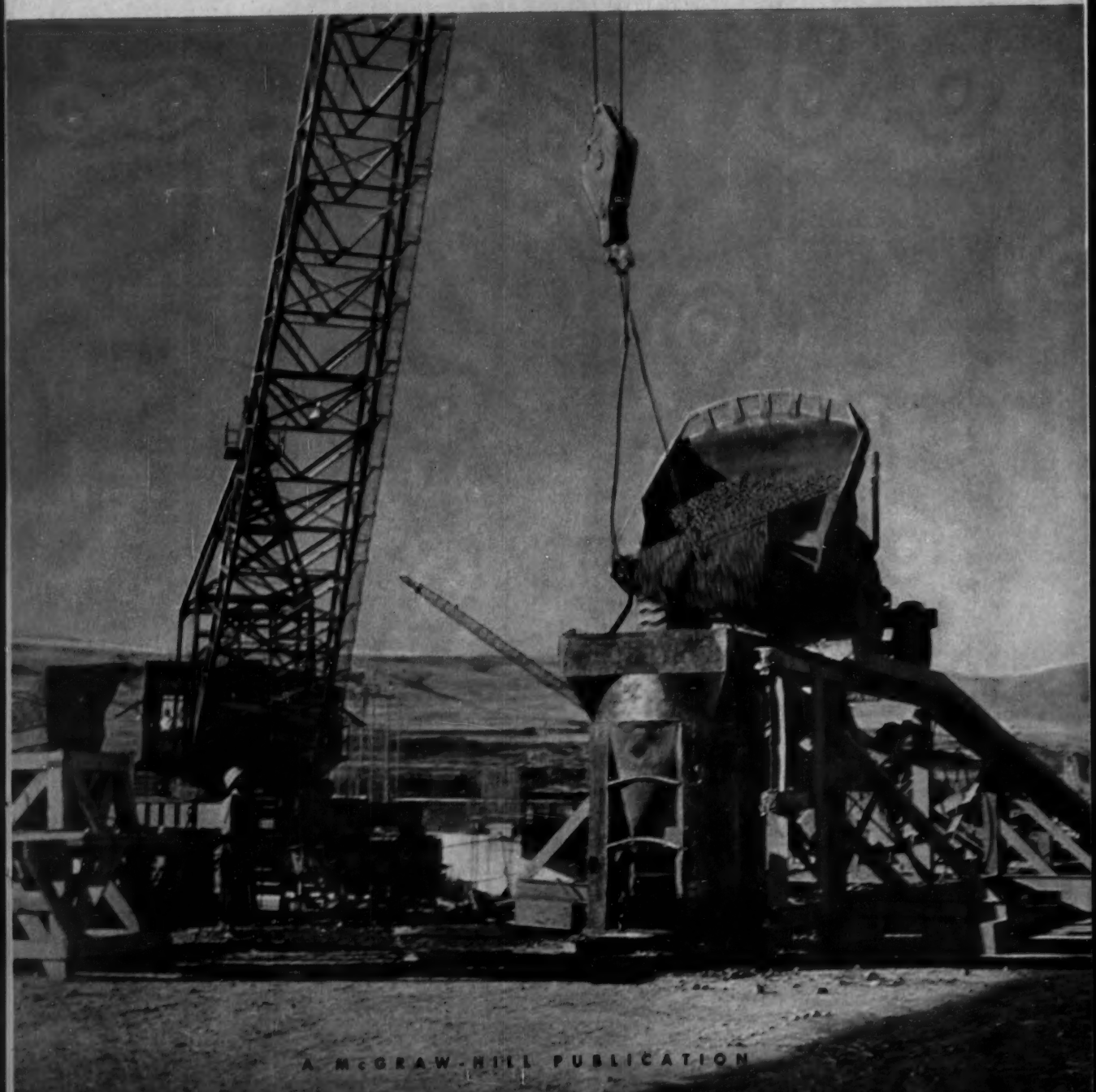
50 CENTS

CONSTRUCTION

METHODS AND EQUIPMENT

March 1955



A McGRAW-HILL PUBLICATION



Cutting a mountain down to size!

Le Roi Tractair provides low-cost air to help dig 30′-deep cut in hard rock

On this job in Arizona, the mobility of Tractair really paid off. It allowed the contractor to make this 30-ft.-deep drainage cut at the same time he was working on the main part of his contract.

Because Tractair is self-propelled, with a low center of gravity, it travelled over this rocky terrain with ease. There was no tying up of trucks and men to move compressed air and tools to the spot. Tractair, with its 125 cfm capacity, took care of the whole operation. And the savings to the contractor were substantial.

The versatility of Tractair, since it is a combination 35-hp wheel tractor and 125-cfm compressor, can save you money, too. You can use it for drilling, tamping, driving form pins, breaking pavement, and a host of "odds and ends" jobs. Write for complete details.

T-34

LE ROI *Division of Westinghouse Air Brake Co.*

Milwaukee 14, Wisconsin

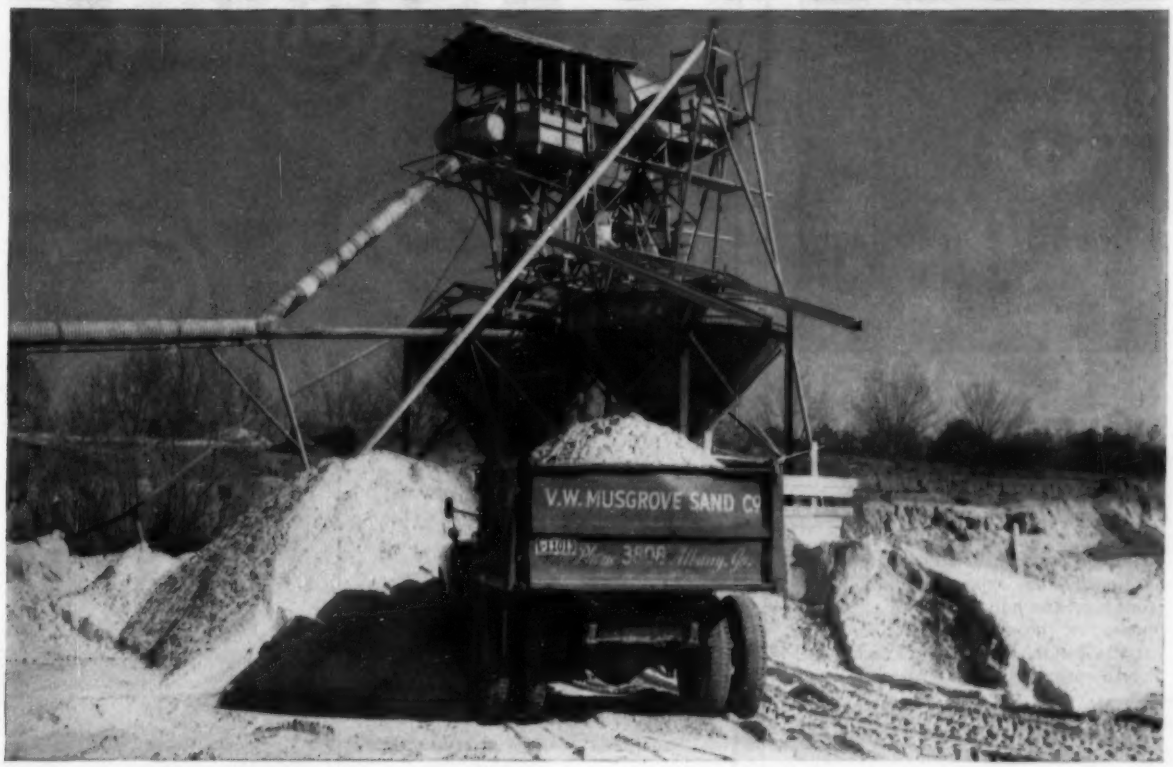


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B.F.Goodrich



Sand company gets 95,000 miles with recaps from all-nylon All-Purpose tires

MUSGROVE Sand Company trucks haul sand and gravel to construction sites within a 45 to 50-mile radius of Albany, Ga. Working as many as 75 hours a week, these trucks travel over all types of roads in all types of weather. B. F. Goodrich tires are used 100%—chosen, says owner V.W. Musgrove, because they cut costs.

B. F. Goodrich All-Purpose tires are built with an *all-nylon* cord body. Nylon is stronger than ordinary cord materials, withstands double the impact and resists heat blowouts and flex breaks. The *all-nylon* cord body outwears even the extra-deep All-Purpose tread—up to 67% deeper than that of a regular tire—and can still be recapped over and over! Musgrove reports that with 2 recaps he gets 95,000 miles of service from *all-nylon* All-Purpose tires!

All-Purpose cleats are curved to grip better, on or off the road. "Buttons" on alternate cleats resist skidding. And as the center rib wears, it widens, putting more and more rubber on the ground, decreasing the rate of wear. All this, plus B. F. Goodrich compressed tread construction that resists abrasion and adds mileage, means that this sand company's tire dollars go farther.

See new *all-nylon* All-Purpose tires (rayon construction available at lower prices) at your B. F. Goodrich retailer's. His address is listed under Tires in the Yellow Pages of your phone book. Or write *The B. F. Goodrich Company, Tire & Equipment Division, Akron 18, Ohio.*



SUPER EXPRESS TIRES used on front wheels here will give about 150,000 miles of service with recaps, V. W. Musgrove reports.



"ALL-NYLON All-Purpose tires have definitely shown that they give much better than average service," owner Musgrove writes.

Specify B. F. Goodrich tires when ordering new equipment.





Symons Forms for Stepped Footings

The construction of stepped footings, ordinarily an expensive method of forming, was handled at no extra expense, on the administration building at the Sandia (N.M.) Air Force Base, by the use of Symons Forms.

Symons Forms are adaptable to commercial, industrial, institutional and public works construction jobs. Symons Service covers the details of a forming job from start to finish. Our engineering staff has had experience with all types of forming and will make many valuable suggestions. Our salesmen are trained to give excellent advice on form erection, pouring and stripping methods. Form layouts and job cost sheets are provided upon request without charge or obligation. This service enables the contractor to get a clear picture of his job, its cost, bill of materials and labor saving methods.

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Volume 37
Number 3

CONSTRUCTION METHODS AND EQUIPMENT

Established 1919

March 1955

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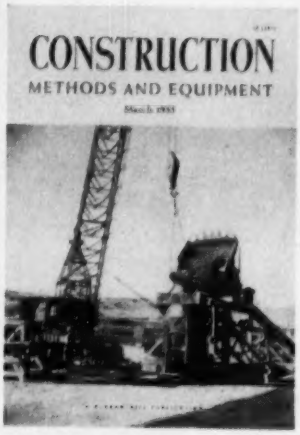
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On the Cover...

Quick-dumping modified Koehring Dumptor spills a batch of concrete into 4-yd Blaw-Knox bucket for The Dalles Powerhouse Constructors at The Dalles Dam on the Columbia River in Oregon. Revolver crane handles bucket from here. (See article, page 90). Ramp used by Dumptor to raise it above bucket is transferred from area to area by a crane, as concrete pouring progresses. Another contractor hauls concrete with trains and trucks.

An editorial index of articles published in Construction Methods and Equipment during 1954 will be available to readers and libraries. Copies will be mailed free of charge—only upon request. The index will be published separately, will not appear in any issue of the magazine.

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Pay Dirt in This Issue

March, 1955

Bridge Slabs Precast on Barges 54

Concrete slabs for an Alabama bridge are precast ashore on barges, towed to the site in the forms, picked off by a traveler, and set in place. The method eliminates a casting yard, and allows the slabs to cure en route.

Creeper Travelers Erect Bridge Towers 70

Creeper travelers that ride up the faces of steel shafts are erecting the high towers that will prop up the suspension cables on Philadelphia's new Delaware River bridge. A steel cradle protects tower sections during upending.

Concrete Building Frames Rise Fast 50

Production-line handling of wood forms for reinforced concrete building frames in speeding construction of a big housing job. Craftsmen are trained to be specialists.

Two Contractors Pour The Dalles Dam 90

Duplicate concrete production and placing facilities allow contractors to meet tight mass concrete specifications while maintaining 4,000 to 6,000 yd daily production.

Clay and Stone Make Good Dike 74

Contractor uses native material to construct economical cofferdam enclosing 61-acre offshore construction site.

Koss Company Has Winter Headquarters 98

Contractor establishes permanent base with resultant improvement in maintenance costs and employee relations.

Concrete Mixing and Placing 114

The third in a series of articles on design and control of concrete mixes covers the use of additives.

Precast Units Frame Building 162

High degree of cooperation between contractor and precast manufacturer completes ambitious precast project.

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NEXT MONTH Ever wished for a handy, easy-to-read specification chart comparing the different models of tractors? The April issue of CM&E will contain a 2-page up-to-the minute listing on 39 models of track-type tractors.

(Advertisement)

Keeping The Job MOVING!

An emergency developed at the site of the new Sewage Disposal Plant at Lucas, O.

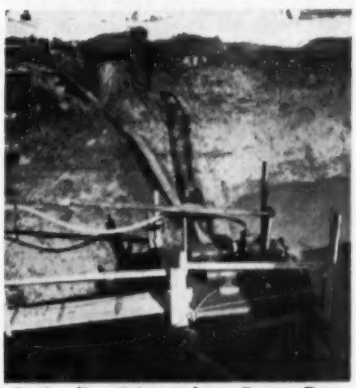
Working with a crane, workmen accidentally wrecked suction piping on their pump rig. This put their Gorman-Rupp 6 inch pump temporarily out of operation. Water from the creek and underground springs swept into the pit which was about 40 to 50 feet deep and 200 feet in diameter.

Quickly, two Gorman-Rupp 3 inch pumps were put into action. From a platform with 10 foot suction lift and discharge of 50 feet to the creek, these two pumps saved the day. The water level was kept down and the digging on the sides of the pit was uninterrupted. The big pump was out of operation for about four hours with no appreciable loss of workmen's time or idle equipment. Anything may happen on the job—it pays to be prepared.

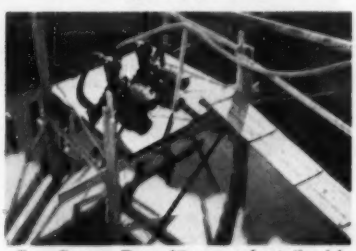
On tough construction jobs everywhere Gorman-Rupp pumps are demonstrating their superiority. Their greater capacity when working against high heads, their great simplicity, trouble-free operation and rugged construction are the best insurance for maintaining job schedules and saving man hours.



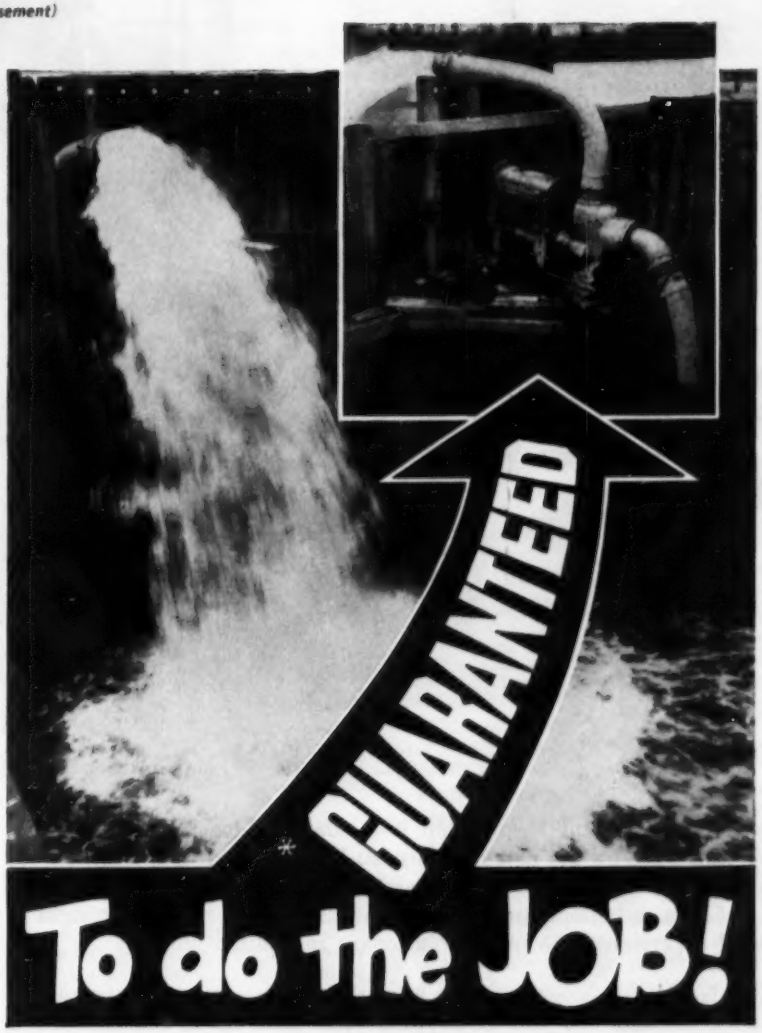
Pit at Lucas Sewage Disposal Plant.



Suction line piping to large Gorman-Rupp pump was accidentally broken by men working with crane.



Two Gorman-Rupp 3" pumps kept the job moving until repairs were made.



The river pours in — cofferdam piles spring leaks — men take risks or work is held up by flood water.

Dependable pumps are of vital importance, working side by side with the men, shift after shift, day in, day out.

To meet target dates, concrete pouring must be non-stop, trucks must move, the job must hum! Keep pumping and you do it.

Make sure — put Gorman-Rupps on the job *before* you have trouble. Our plain language guarantee is backed by a long record of proven performance *On-The-Job.*

**Ask for Bulletin and the Guarantee*



NOTES FROM THE FIELD

At the Sandusky River bridge on the Ohio Turnpike Gorman-Rupp pumps worked around the clock with men on 3 shifts. At times they pumped 3 weeks continuously, 24 hours a day and no trouble.

THE GORMAN-RUPP COMPANY
MANSFIELD, OHIO

NEW 35 ton Rear-Dump



Model B Tournapull Rear-Dump is a new machine completely designed and built by the new LeTourneau-Westinghouse Company. Developed by our engineering and research staff, it was built after careful study of today's hauling unit requirements. Its design is based on eight years of experience with our revolutionary rear-dump units.

Hundreds of these earlier units are at work today . . . in mines, quarries, collieries, construction jobs . . . anywhere that material is being hauled by modern methods and modern equipment. They have been highly successful, as proved by our list of re-orders from old customers.

In the new machine, the Model B prime-mover powering the B Rear-Dump is a big powerful tractor engineered for quick and easy accessibility of all components. Every part has a "plus" safety factor to give you the most rugged hauling unit ever built. Dozens of improvements, large and small, give you a hauler that does the job better than any Rear-Dump ever produced.



10 forward gear speeds: 2, 4, 6, 8, 11, 16, 19, 24, 28, 34 mph . . .
2 reverse speeds: 2, 4 mph.

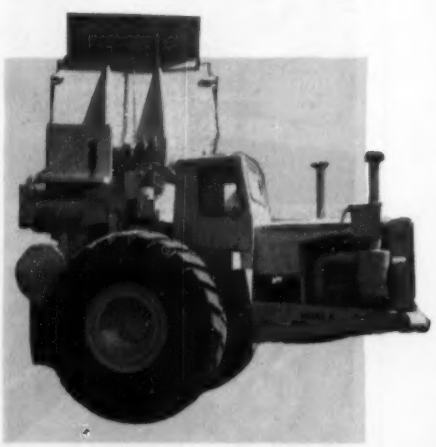
Check these features:

High speed matched to haul conditions

Tournapull B Rear-Dump has 10 forward speeds to 34 mph. Operator easily selects gear which gives him top speed. Double-clutching has been eliminated by addition of clutch brake for faster, easier shifting. Rapid shift and snappy acceleration of 300 hp diesel engine lets you move rapidly into higher gear ranges.

Improved gradability

Better distribution of weight forward onto drive wheels allows "B" to go up steeper grades than previous models could. This improvement, plus selection from 10 forward speeds, plus ample horsepower gives you a unit that can climb at reasonable speed up any grade normally found on any mine, quarry, or construction job.



LET

A Subsidiary of
Westinghouse Air Brake Company

Non-stop U-turns in 35′

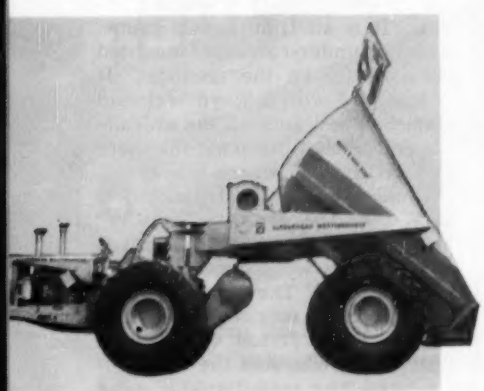
2-wheel prime-mover turns 90° right or left . . . machine in normal use makes non-stop 180° turn in space only 35′ wide. With bowl raised (which shortens wheelbase from 21′ to 12½′), "B" turns around non-stop in space only 27′ wide. This extreme maneuverability enables you to work in tight quarters where smaller conventional haulers often cannot go. You save time on any job at both shovel and dump because Tournapull can position faster . . . rarely needs to jockey back and forth like conventional haulers.

Easy loading

Big wide "target" area makes for fast loading cycles. Bowl is 17′8″ long, 10′2″ wide, has maximum depth of 7′6″. Rear of body provides wide, low entry for dipper to give extra speed advantage for the excavator. Low entry, plus wide body, reduces spillage. Rig carries 35 tons, 23 yards struck, 27 yards on 2-to-1 heap, without sideboards.

Fast dumping

Body raises to vertical position at touch of dashboard switch. Inside of body is completely streamlined. No material rides back to shovel or dragline to steal payload room on next trip. Edge of bowl swings behind and below rear wheels so rocks cannot roll forward to lodge against wheels nor can material pile under rear end.

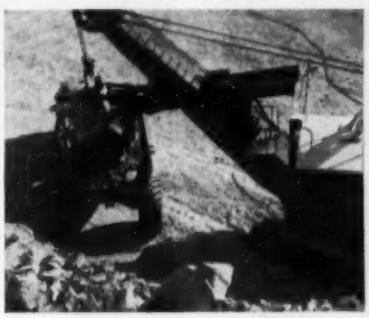


Better flotation

Low-pressure tires more than 2 ft. wide and 7 ft. high, both front and rear, give excellent flotation. You get better traction than with other rubber-tired haulers because these broad pneumatics, with their low pressures and thick, deep lugs, have more gripping surface than duals. These features, plus power-transfer differential and power steer, take Tournapull through soft going *loaded* where other haulers with their narrow tires cannot go empty. Unit uses four 27.00 x 33's, 30 ply, as standard . . . tires *and* wheels are interchangeable between front and rear.

Rugged construction

Body is heavy steel plate, rigidly reinforced with box-beam ribs. Gussets are included for extra support at points of special stress. Slanting surfaces of scoop-shaped body take blows at an angle and tend to quickly establish a load cushion to protect the floor. Bottom consists of 2 layers of heavy steel plate separated by thick steel billets to absorb loading shocks. Floor is faced with welded-on tool-steel strips to resist wear. Main case of prime-mover is built extra strong . . . will not distort to put strain on power-train.



Simple, positive electric control

Fingertip electric control of hoist and steer gives fast, positive action. Big advantage of electricity is that motors can be placed at point of action . . . there's far less power loss than with other control systems . . . no leakage or pressure problems . . . less maintenance. Push-buttons on dashboard operate dump at touch of fingertip.

Lower maintenance

Problems of conventional rear-dumps are eliminated by simple design of B Tournapull Rear-Dump. You have no troublesome hydraulics, no long driveshafts, no springs, spring hangers, no hinged steering-connections. Owners all over the world report exceptionally high mechanical efficiency and low maintenance.

Greater safety

Heavy-duty air brakes provide a total of 7536 sq. in. total braking surface. That's more braking surface on each wheel than most haulers have on the whole machine. Smooth and powerful, they provide safe control in any weather . . . improve maneuverability . . . give operator confidence for faster operation on steep grades, narrow, winding haul roads. Optional electro-



tarder that puts an electrical resistance on generator power circuit provides additional braking action and saves wear on service brakes. Parking brake locks transmission output shaft for simple, sure braking action.

Job-proved prime-mover

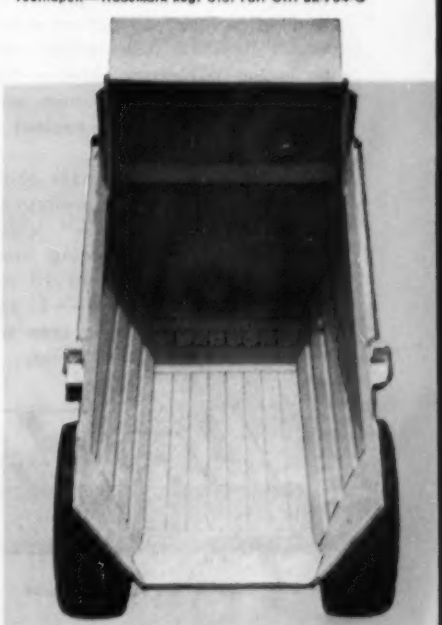
17 years' experience on thousands of installations is behind the famous Tournapull 2-wheel prime-mover. Its design gives you power steering through geared kingpin coupling prime-mover and hauling unit. You also get the exclusive Tournapull power-transfer differential which automatically transfers power from slipping drive wheel to drive wheel on firmest footing.

Profit-making interchangeability

You can interchange Rear-Dump with Scraper, Bottom-Dump, Flatbed, or Crane. Each additional trailing unit costs only about 25% of original total price. You save money because all you need buy is trailing unit body . . . rear wheels, tires, and brakes may be interchanged.

You'll want to learn more about all the advantages of the remarkable new Model B Tournapull Rear-Dump. Ask your LeTourneau-Westinghouse Distributor for all the details.

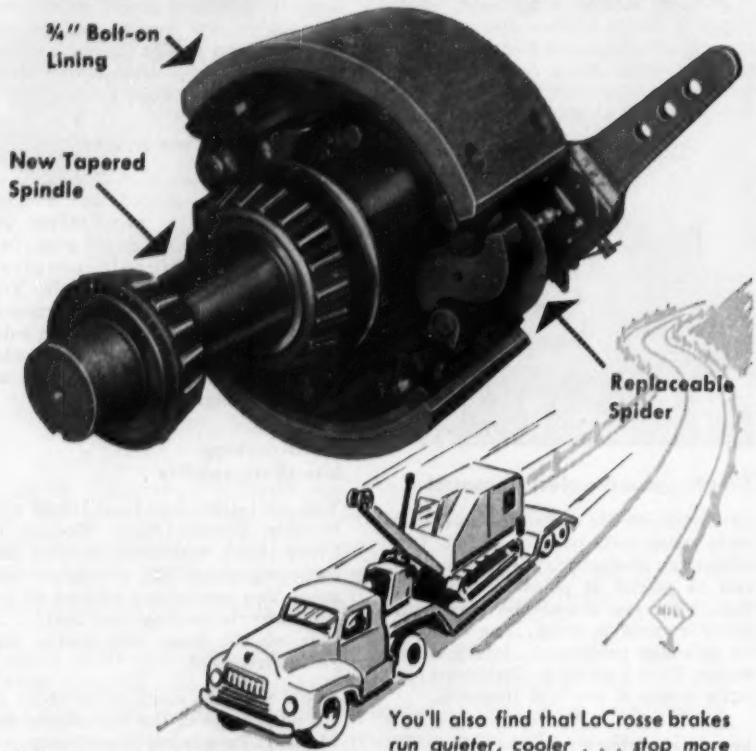
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LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

BIGGEST
Safest Brakes on 15" wheels!



When you have to STOP a heavy trailer load barreling down a steep grade, that *EXTRA 52 sq. in. of braking surface* you get on a LaCrosse tandem axle trailer, can mean the difference between life and serious injury — to men and to the equipment being hauled!

Remember, every LaCrosse-engineered trailer brake measures 12¾" x 6" wide — ½" *wider than any competitive lining used with 15" tires.* This means 13 sq. in. more lining per wheel — 52 sq. in. of extra safe braking area on every LaCrosse 4-wheel trailer.

You'll also find that LaCrosse brakes *run quieter, cooler . . . stop more smoothly.* Reason? Special exclusive S-cam design, with worm-gear slack adjusters and direct chamber-to-axle mounting. Linings are tough ¾" bolt-on type, which *outlast ordinary lining 45%,* according to owner records. In addition, LaCrosse now gives you removable bolt-on brake spiders, for quick, economical field replacement as needed—another important advantage found only on LaCrosse.

For free literature describing ten other exclusive LaCrosse advantages, write: LaCrosse Trailer Corp., Gould St., LaCrosse, Wis.

LC-33

LaCROSSE
America's Favorite **LOW-BED TRAILER**

★ JOB TALK ★

...About Methods



Crane Mounts On Sandboat

Lake Erie sand is brought in daily with an efficient sandboat developed by Lake Sand and Gravel Co, Monroe, Mich. Some 300 tons of sand are sucked from the bottom and piled on deck. The vessel also has its own built-in unloading device. It is an L-50 Lorain crane, without under-carriage, mounted permanently on the sandboat. It is equipped with a ⅝-yd Wellman clamshell and does all the unloading and stockpiling along the shore at Toledo, Ohio, where it is based.

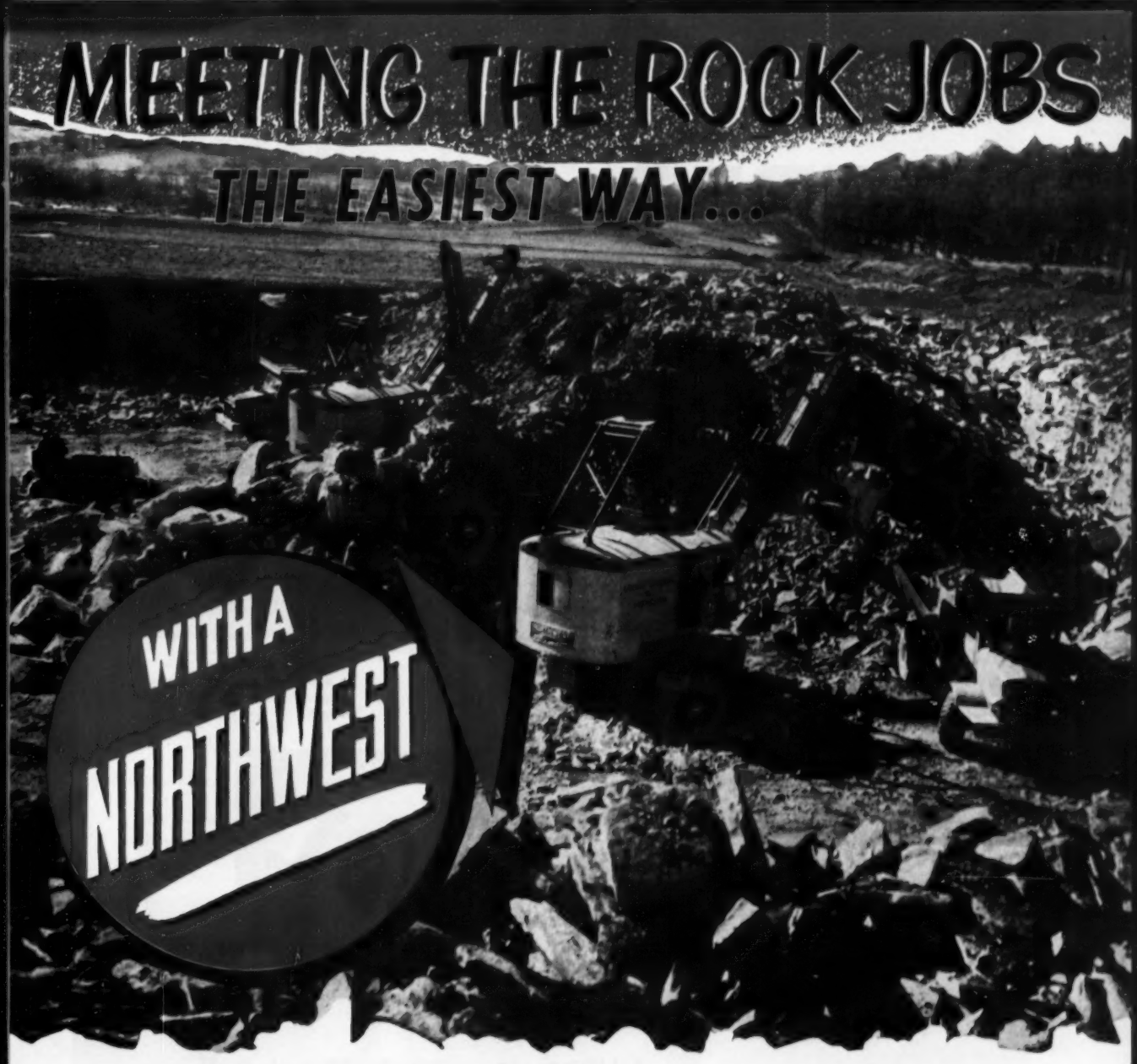
Proper weight distribution to keep the lake craft "seaworthy" and the rigid mounting required were factors worked out by close cooperation of Thew-Lorain engineers and field service personnel of the W. H. Anderson Co., Detroit distributor, who sold the crane.

Steam Pile Hammer Breaks Concrete Roof

A steam piledriver with a Vulcan No. 2 Hammer did a fast job of breaking a thick concrete tunnel roof during the modernization of a major highway interchange in Los Angeles. Breaking balls could not be used because of the hazard to near-by traffic. Charles MacClosky Co., contractor on the job, reports that the method worked well, even though the slab varied in thickness from 24 to 36 in. and was reinforced with two mats of

(Continued on page 12)

MEETING THE ROCK JOBS THE EASIEST WAY...



● Look at that Rock Pile! Ability to handle stuff like this is what backs up our statement, "that when you have a Northwest you have a *real* Rock Shovel." Performance in digging like this makes repeat orders, and repeat orders mean satisfaction.

Northwest design begins from the bottom up for rock work—cast steel machinery bases and machinery side frames, crawlers that give self-cleaning action and more easily negotiate tough going, the Cushion Clutch that eliminates shock overloads to parts under power, the "Feather-Touch" Clutch Control for easier handling. Uniform Pressure Swing Clutches that take the jerks and grabs out of swinging, the Northwest Dual Independent Crowd that utilzes force most other independent crowd shovels waste—these are but a few of the advantages that Northwest Rock Shovels bring you. And remember, if you have a *real* Rock Shovel you never have to worry about output in *any* digging. With the advantages and proved performance of a Northwest it's no wonder Northwest owners come back!

NORTHWEST ENGINEERING COMPANY
1503 Field Bldg., 135 South LaSalle St., Chicago 3, Illinois

NORTHWEST

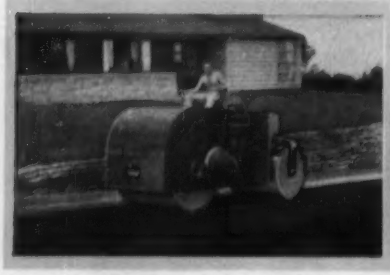
SHOVELS • CRANES • DRAGLINES • PULLSHOVELS



HUBER—WARCO

HUBER-WARCO Tandem Rollers . . .

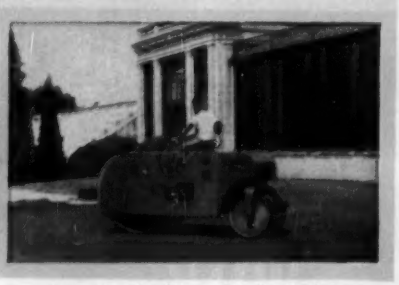
have the exclusive Huber-Warco feature of a completely adjustable guide roll assembly that will not scuff. Other features include: a variable speed steering valve that gives any desired feel to the hydraulic steering; all welded construction; two independent braking systems on the medium and large sized tandems and optional fluid coupling meaning less machine wear and less drive roll slippage. Huber-Warco tandems are gasoline or diesel powered.



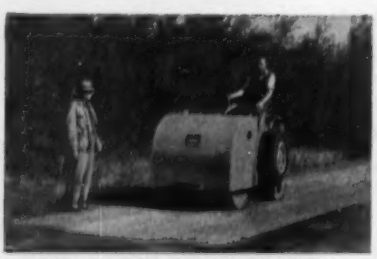
5-8 and 8-10 Ton Tandems. Both models have been newly designed. Unusually close curb clearance makes these tandems versatile performers.



8-12 and 10-14 Ton Tandems. These machines are built to handle big jobs with smoother, faster operation and provide extra long life.



3-5 Ton Tandem. This small tandem is ideal for driveways, streets, alleys, patching, etc. A rubber-tired trailer for quick transport is available.



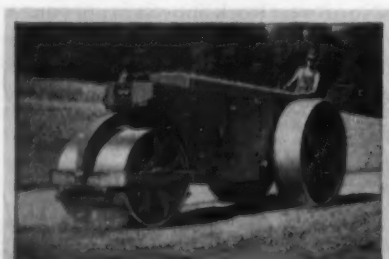
5-Ton Retractable Wheel Roller. A full 5-ton tandem, it uses its own power to raise and lower trailing mechanism. Two hydraulic cylinders raise and lower trailing wheels.



3½-5 Ton Portable Tandem. Movement from job to job is easy with this tandem. Wheels, axle, and hydraulic jacks are provided. Changeover takes only a few minutes.

HUBER-WARCO 3-Wheel Rollers . . .

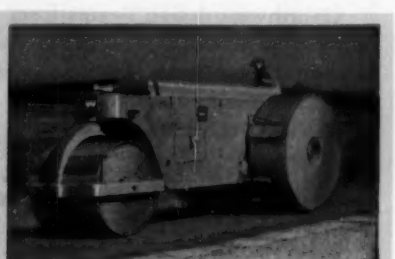
are built for years of trouble-free service. The low pressure hydraulic steering, powerful high leverage mechanical brakes, all-welded frame construction, low center of gravity enabling the roller to work on sharp side angles, and Huber-Warco's exclusive low pivot point front-end suspension giving longer roller life and stability from walking or twisting, all add up to extra value in a Huber-Warco 3-Wheel Roller. Choice of gasoline or diesel power.



General Purpose. Ranging in size from 5 to 14 tons, these rollers perform in the compaction of earth fills, embankments, subgrades, trenches and insulation courses.



Finishing. Ideal for surface treatment, rolling water bound macadam, sheet asphalt, and other bituminous mixtures, these rollers ranging in size from 5 to 14 tons, are fast and maneuverable.



Variable Weight. Available in 8-10, 10-12 and 12-14 ton models, the Variable Weight 3-Wheel Rollers are the answer for all variable compression.

A COMPLETE LINE OF PROVEN ROAD MACHINERY

HUBER-WARCO Motor Graders . . .

are designed to do every kind of surface grading job economically, speedily and with a minimum of costly "down time" for blade adjustment on the job. Complete hydraulic cab-controlled movement of the blade from 90° elevation on the one side to 90° on the other, eliminates any manual adjustment. Other features include: extra clearance under high arched front axle; mechanical steering with hydraulic booster; 360° blade rotation without removing scarifier teeth. Power sliding moldboard is optional. Units are diesel powered.



4D-75. Blade control from the cab, with no manual adjustments, permits a complete range of bank sloping positions.



4D-85. Truly multi-purpose, Huber-Warco graders can handle a variety of jobs efficiently and dependably.



4D-115. The Huber-Warco blade handles any ditching need . . . rough cut, flat bottom, V-cut . . . wide or narrow.

HUBER-WARCO Maintainers . . .

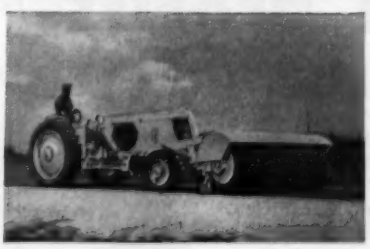
handle efficiently all grader maintenance jobs. With one machine and attachments 10 jobs can be handled. This 42½ horsepower machine performs as a grader, bulldozer, broom, side dozer, lift-loader, road planer, snow plow, berm leveler, patch roller and mower. Owners credit Huber-Warco's blade-pushing design for a THIRD MORE WORK than conventional pulled blades would produce. Hydraulic controls govern movements of the moldboard and all attachments.













HUBER WARCO

HUBER-WARCO COMPANY

MARION, OHIO, U. S. A.

Road Machinery

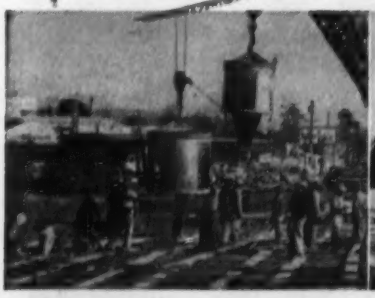
CABLE ADDRESS: HUBARCO

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

it takes

SPECIAL DELIVERY

on concrete jobs





SPECIAL DELIVERY **ELIMINATES RAMPS**

In building construction, Gar-Bro Concrete Buckets save the cost of building ramps and scaffolds.

SPECIAL DELIVERY **PREVENTS DELAYS**

Delay of truck mixers, and placing and finishing crew are eliminated with Gar-Bro Hoppers.





SPECIAL DELIVERY **5 TIMES FASTER**

Fast shuttle speeds over longer distances prove economy & high hourly capacity of Gar-Bro Power-Carts.

SPECIAL DELIVERY **IS A 1-2-3 OPERATION**

This Gar-Bro Hopper is serving as intermediate concrete storage between bucket and carts.

to increase profits

EVERY CONCRETE JOB requires *special delivery* methods for handling and placing concrete *profitably*. It takes planning and it takes careful selection of equipment of the right capacity. That's the big reason why you should depend upon Gar-Bro. For only Gar-Bro has a complete line of concrete handling equipment in all sizes and capacities.

Only Gar-Bro dealers specialize in concrete handling and placing methods and equipment. See your Gar-Bro dealer, consult him about your next job.

GAR-BRO MANUFACTURING CO • Los Angeles, Calif. • Peoria, Ill.
General Offices: 2415 E. Washington Blvd., Los Angeles 21, California



Ask your dealer for the Gar-Bro Manual . . .

GAR-BRO

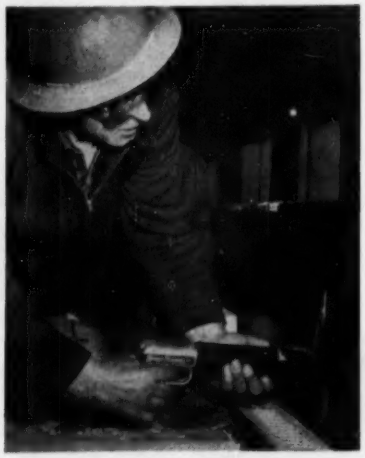
the world's most complete line of

CONCRETE HANDLING EQUIPMENT

JOB TALK . . . Continued from page 8



1¼-in. square bars placed 4 in. on center. As the slab was broken, bars were burned off and concrete pieces removed by a clamshell.

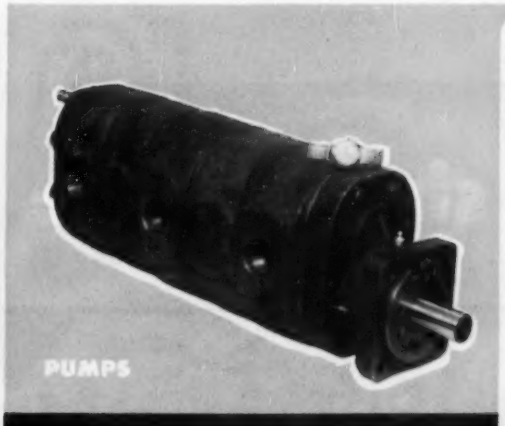


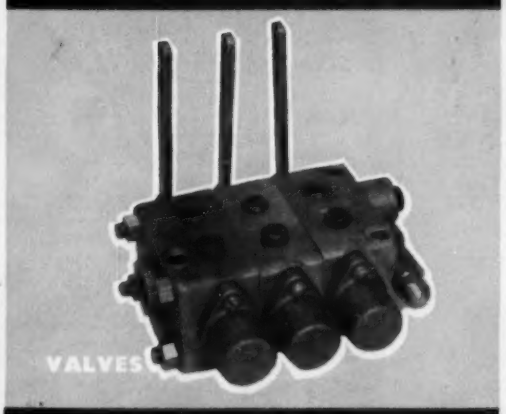
Fasten Brick Ties To Steel

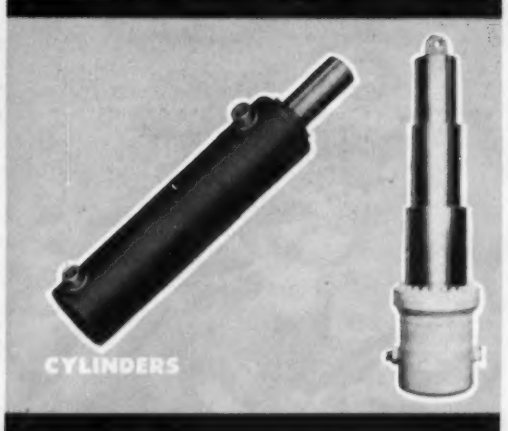
Thousands of metal ties to hold a brick wall were fastened to the steel frame of a 12-story powerhouse in New York City with Ramset powder-actuated tools and steel fasteners—with a time-saving of 85% over other possible methods, according to the contractor. Specifications called for metal ties to anchor the brick front of the $40,000,000 building against vibrations of two large turbines inside.

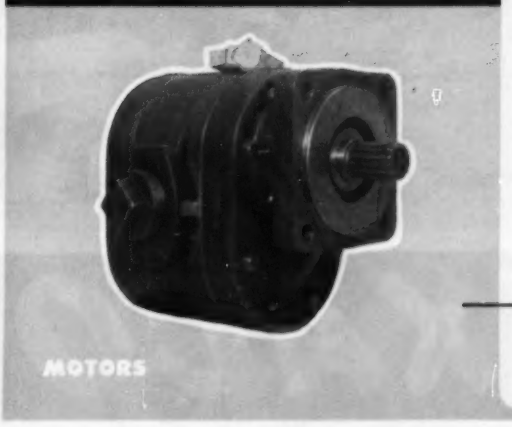
Installing the ties with powder-actuated tools left no damage on the building's steel, already treated for corrosion resistance, and eliminated extra treatment of spots that might have been left by several other methods, according to the contractor, Atlas-Carlin. The job is

(Continued on page 26)









YOU'RE PAYING FOR AN OIL HYDRAULIC SYSTEM- WHY NOT GET IT?

"Commercial" Fluid Power Controls Keep Mobile Equipment On The Go

Pumps Heavy duty constant delivery hydraulic pumps developing from 2 to 100 gpm will give trouble-free dependable service even though operating pressures go as high as 1500 psi—with side or end porting, flange or pad mounting, splined or round shafts, split flange on threaded connections. More than one pump, each independent of each other, can be mounted on a common shaft in a unit.

Valves Finger tip directional control valves with positive hold in each action have non-restricted capacity up to 35 gpm to pressure up to 2000 psi. Control from any combination of manifolds having single action, double action or double action with float can be assembled into a multiple unit. Solid spool construction with either spring return or poppet detents are standard.

Cylinders For powered in-line motion in the hydraulic system you can depend on these slim silhouette heavy duty single acting and double acting cylinders. Standard in many styles of plunger fittings and cylinder mountings. They are available with stroke up to 45 inches and capacities up to 25 tons—working pressure up to 1500 psi. Multiple sleeve telescopic cylinders with stroke up to 84 inches have low shut height.

Motors Rotary motion applications in the hydraulic system perform better when powered by "Commercial" rugged heavy duty constant delivery motors which convert fluid power at pressures up to 1500 psi into mechanical power up to 35 hp. Features of the "Commercial" pump are likewise common to these motors. More and more applications are now practical because of "Commercial's" new fluid motor.

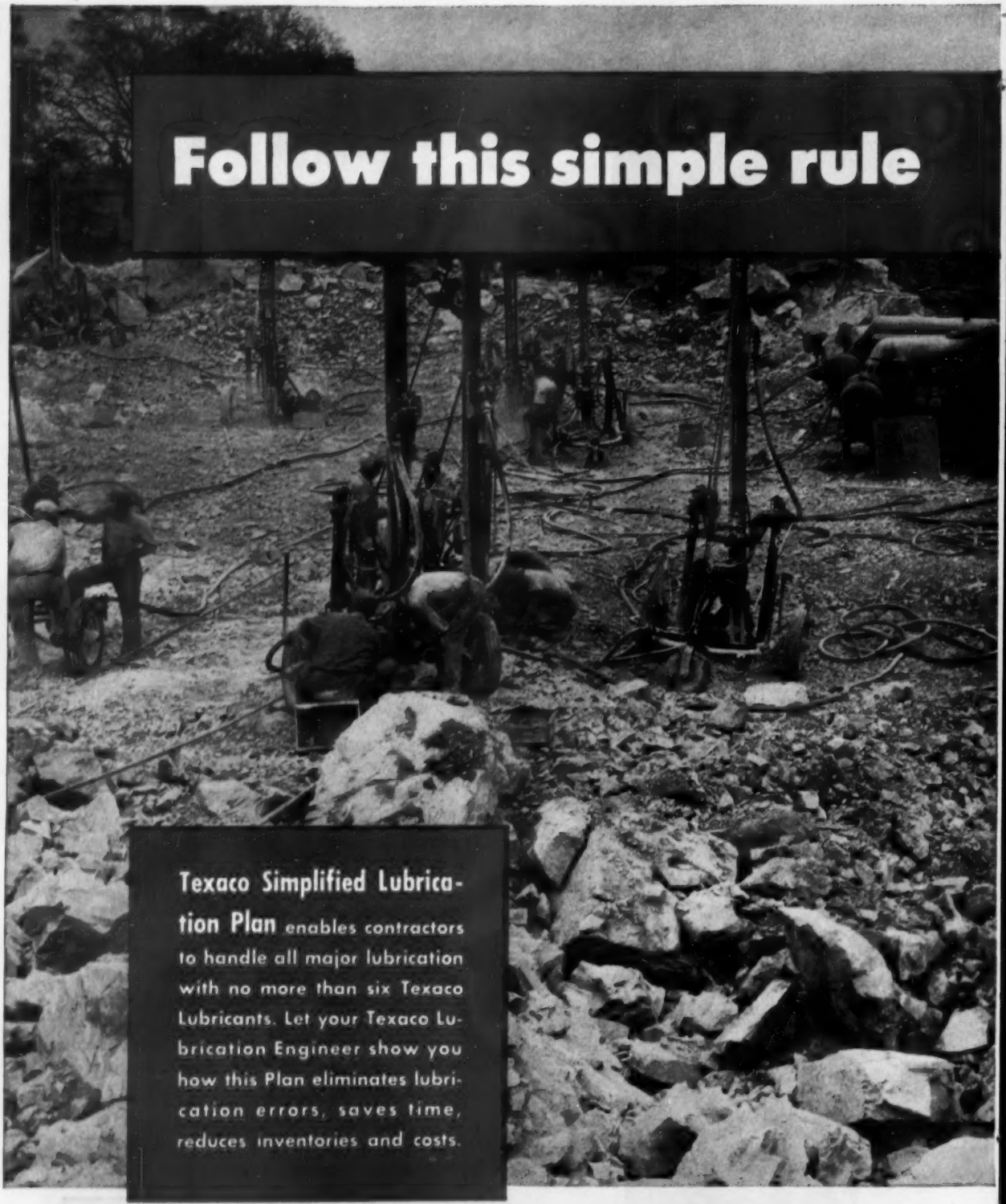
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Products Preferred by Customer Acceptance

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TUNE IN...TEXACO STAR THEATER starring DONALD O'CONNOR or JIMMY DURANTE on TV Saturday nights. METROPOLITAN OPERA radio broadcasts Saturday afternoons.

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and CUT COSTS



LUBRICATE YOUR AIR COMPRESSORS with the oil that will keep them clean and rust-free—*Texaco Regal Oil R&O*. This premium-quality oil keeps costs low because it keeps valves clean for proper functioning, keeps lines clear and piston rings free, and prevents rust and harmful deposits in the system.

Texaco Regal Oil R&O is a superior oil—a special refinement of choice base stocks, with effective additives and extra processing to enhance its fine natural qualities. There is a complete line of *Texaco Regal Oils R&O* to meet the requirements of all types and sizes of compressors and all operating conditions.

To guard your drills against wear and rust, use *Texaco Rock Drill Lubricant EP*. Its fine extreme pressure properties assure longer drill life, less work for your "drill doctor."

Get in touch with a Texaco Lubrication Engineer and let him help you cut maintenance costs on all your equipment. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

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The Texas Company, 135 East 42nd Street, New York 17, N.Y.

Lubricants and Fuels

FOR ALL CONTRACTORS' EQUIPMENT

It's Your Business . . .

Get the Most Out of Your Equipment Buying Policy*

Bank Offers Flexible Financing Plans; Makes Equipment Buying Easier

TODAY, BECAUSE OF the increased competition and close bidding, the squeeze on contractor working capital is greater than ever. The Franklin National Bank of Franklin Square, Long Island, New York, shows what a bank can do to meet the needs of contractors who want to buy equipment in this rising construction market, but whose working capital is too slim to purchase expensive new equipment outright.

The Franklin's Equipment Finance Dept. has reduced down payments and extended repayment periods. Realizing that large down payments have been the contractor's biggest stumbling block, it has reduced them to as low as 15% for new equipment. Furthermore, instead of having a maximum of 24 months to pay the balance, contractors may now be able to take as long as 48 months, depending on the type of equipment. The longer terms can help a contractor conserve his capital by timing repayments close to the rate that equipment pays for itself.

New Finance Plans

The Franklin's Equipment Finance Dept. offers two plans which contractors can use to finance new equipment purchases.

The Bank Even Payment Plan requires a 20% down payment, with the balance paid off in equal installments over 36 months (48 months for cranes and shovels.) The interest cost amounts to 4.3% per yr on the original unpaid balance.

The Bank Equity plan is the newest, initiated last November. It requires a 15% down payment, but instead of equal monthly payments, they are large during the early financing period and drop toward the end. The rate of repayment is based on the "sum-of-the-digits" method allowed by the new rapid depreciation schedules (CM&E Sept. '54, p. 18.) Thus, if a contractor takes 48 months to pay (the maximum for all types of equipment under this plan), he pays the down payment plus 40% of the unpaid balance in the first year, 30% of the unpaid balance in the second year, 20% in the third and 10% in the fourth year. On a 36-month plan he pays one-half the unpaid balance the first year, one-third in the second and one-sixth in the third year.

Skip-payment

An unusual feature of these plans is that a contractor can postpone payments for two or three months if he's in a slow period, or bad weather or a strike holds up the job.

The Skip-payment plan allows a contractor to put off up to three months' payments in each year of the contract. There's no charge for a one-month skip but for a two-month or three-month skip he pays an additional charge of 1% on the original unpaid balance.

If the contractor purchases equipment in the late fall, for instance, under the Bank Even Payment plan he can use the three months' skip immediately. On the Bank Equity plan, he can skip only after making three monthly payments.

Reflect Dealer Thinking

In developing its new plans, the Equipment Finance Dept. went right to the dealers to get their ideas on what financing terms are best suited to their own and contractors' needs. The Department finds that construction equipment dealers are keen business men with experienced judgment on what financing terms are sound and which are unsound for themselves and their contractor customers.

The result is a selection of plans which put less strain on dealers' and contractors' pocketbooks, but at the same time are designed to help keep them in a strong financial position.

In the old days, contractors financed their new equipment purchases by short-term borrowing, sometimes by 60- or 90-day notes, or by mortgaging their existing equipment. But as firms grew, their equipment and working capital needs also increased. This situation was intensified by rising construction costs and higher equipment prices.

To spread the cash drain caused by purchases of expensive rigs, contractors gradually shifted to longer financing—generally 25% down and up to two years to pay, depending on the type of equipment and the contractor's financial condition.

The Franklin's Equipment Finance Dept. believes that the lower down payments and longer periods allowed by its latest plans are the maximum terms consistent with sound financing. The advantages of these new plans have helped expand its dealer financing to 8 eastern states out of an eventual goal of 11 states ranging from Maine to Maryland and extending to western New York. The Department now has paper outstanding which runs into the eight-figure bracket—and the business is growing.

* This is the second of several articles to appear on this page in 1955 discussing equipment buying policies for contractors.

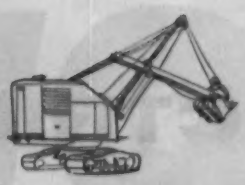
Highway Prices Firm Up

The prolonged decline in highway bid prices in the face of rising materials prices and labor rates appears to have run its course. While highway price trends

(Continued on page 20)

Caterpillar announces

A NEW LINE OF TORQUE CONVERTER POWER UNITS





WIDE CHOICE OF POWER UNITS

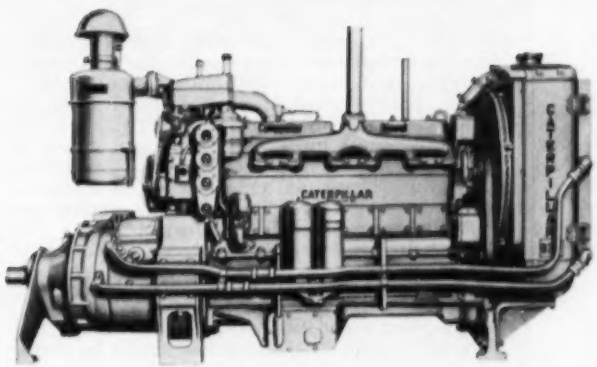
Engine and torque converter
Engine, clutch and torque converter
Engine, clutch, torque converter and reverse gear

WIDE CHOICE OF OUTPUT SHAFTS

Standard heavy-duty drive for side loads
Narrow chain housing for side loads
Wide chain housing for side loads
Output shaft for in-line loads only

Fast Facts About CAT* Torque Converter Power Units

1. Torque output is automatically matched to the load.
2. Loads start smoothly.
3. Load movement can be controlled without using the clutch.
4. Overloads cannot kill the engine.
5. Need no special hydraulic oil—their fluid is engine fuel—fluid level automatically maintained.
6. Cat Diesel Engine burns non-premium fuels cleanly and efficiently, even when idling.
7. Caterpillar can supply your torque converter requirements from stock.
8. Caterpillar Dealers have facilities and parts for servicing torque converters.



Now, to provide you with a greater selection of power packages, Caterpillar offers a new line of torque converter units. As many as twelve different torque converter arrangements are available for *each* of six Cat Engines, up to 480 HP. Whatever your power needs in excavators, cranes and other construction equipment, you'll find the right unit in Caterpillar's line.

In offering torque converter power, Caterpillar has combined extensive research with years of practical application in the field. Here are owners' reports of units on actual jobs: "Live and snappy with plenty of power" . . . "We get an abundance of power out of these torque converter power units."

Either as original or replacement power, it will pay you to check the advantages of torque-converter-equipped Cat Diesels. Each is matched to do *more* work at *lower* cost with *less* down time than any competitive unit. Leading manufacturers of construction machinery can supply these money-makers in the equipment they build.

For complete details about these production boosters, see your Caterpillar Dealer. He has the experience and technical knowledge to help you with your power problems. He has trained personnel who know how to install engines and torque converter power units in construction machines. Call him today!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS, U.S.A.

Please send me further information on Cat Diesel Torque Converter Power Units

Name _____

Company _____

Street _____

City _____ *Zone* _____ *State* _____

THE NEW STANDARD OF TORQUE CONVERTER POWER

ELECTRIC POWER

DELCO-REMY ThunderVolt A.C. GENERATORS FOR EXTRA-HEAVY ELECTRICAL LOADS

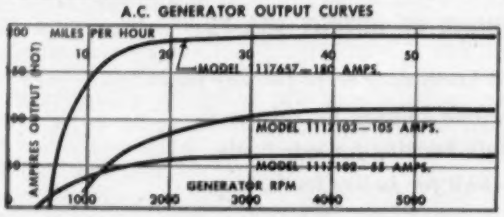
Delco-Remy's new ThunderVolt-12 A.C.-D.C. charging systems are the answer to the *extra-heavy* electrical demands of late-model contractors' trucks, police prowl cars, and other vehicles equipped with two-way radio, floodlights, or other special electrical units. High wattage output is ample for heaviest electrical loads . . . generators pick up discharged batteries quickly in emergencies. Delco-Remy A.C.-D.C. charging systems are unexcelled at curb-idle . . . furnish up to 180 amperes at higher engine speeds . . . are dependable under the most rugged operating conditions at all engine speeds.

ThunderVolt 6 and 12 application packages, complete with installation instruction sheets for popular makes of cars and trucks, are available. Conversion is simple. See your nearest United Motors distributor for additional information.

A.C. GENERATOR PERFORMANCE DATA

Model	Volts	Cut-In RPM*	Curb Idle Amperes*	Maximum Amperes	Power Watts*	Recommended For
1117102	12	600	30-40	55	660	All speeds.
1117103	12	975	6	105	1260	All speeds.
1117657	12	625	100	180	2160	All speeds.
1117062-3-4	6	750	30-40	90	540	All speeds.
*APPROXIMATE (BASED ON 100 GENERATOR RPM/MPH)						

A.C. GENERATOR OUTPUT CURVES



DELCO-REMY ThunderVolt D.C. GENERATOR FOR MEDIUM-TO-HEAVY ELECTRICAL LOADS

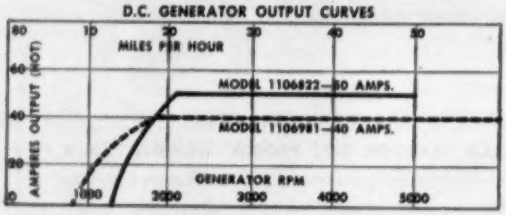
Delco-Remy's ThunderVolt-12 extra-output D.C. generator is an economical answer to the electrical needs of late-model contractors' trucks, suburban police cars, rural mail cars . . . other vehicles with additional lights, two-way radios, or other special electrical equipment in medium- to heavy-duty service. Delco-Remy extra-output D.C. generators are low in cost, simple to install, economical to maintain. Performance data on the ThunderVolt D.C. generators are shown at the right.

For further details and application data, see your nearest United Motors distributor.

D.C. GENERATOR PERFORMANCE DATA

Model	Volts	Cut-In RPM*	Curb Idle Amperes*	Maximum Amperes	Power Watts	Recommended For
1106822	12	1300	0	50	600	Medium to high speeds.
1106981	12	800	15	40	480	Low speeds & idling.
1106757	6	830	15	55	330	Medium to high speeds.
1106758	6	600	25	45	270	Medium to high speeds.
1106977	6	600	28	55	330	Low speeds & idling.
*APPROXIMATE (BASED ON 100 GENERATOR RPM/MPH)						

D.C. GENERATOR OUTPUT CURVES

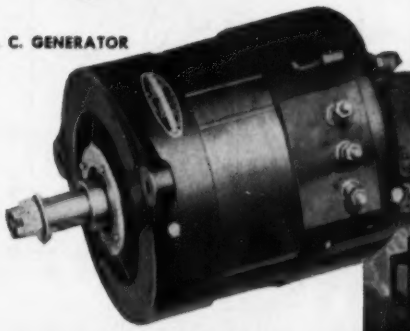


Delco-Remy
ThunderVolt
ELECTRICAL SYSTEMS

DELCO-REMY • DIVISION OF GENERAL MOTORS • ANDERSON, INDIANA

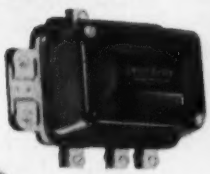
right for the job

A. C. GENERATOR

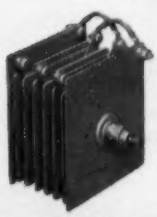




REGULATOR



RECTIFIER

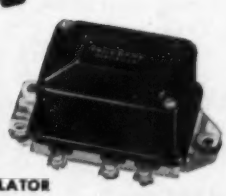




D. C. GENERATOR



REGULATOR



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A GENERAL MOTORS PRODUCT A UNITED MOTORS LINE

Scenes like THIS
are helping reduce insurance costs
on jobs like THIS



Construction view, Folsom Dam, American River, California. Merritt-Chapman & Scott, and Savin Construction Co., both use AJAX Cups and drinking water equipment on this multi-million dollar project.

Cost-conscious contractors on big and little jobs all over the country are using AJAX Cups to get approved safety messages into their workers' hands several times a day, when they're relaxed, receptive, ready to read.

Because they know – and the National Safety Council confirms it – that safety messages *that get read* do help reduce accidents. And a good accident record means lower insurance costs . . . can mean the difference between profit and loss on the job.

A TYPICAL EXAMPLE

(Actual case history from insurance company files)

A steel construction firm in one year paid insurance premiums of $3751. This included a charge, above the manual rate of 10.8%. The next year – despite a 5% increase in manual rate – their insurance cost only $3191 . . . because an active accident-prevention program had earned them a credit of 10%, saving hundreds of dollars in cost!





AJAX® CUPS and Drinking Water Tanks deliver fresh water to workers – mean less time lost on the job. AJAX Cups and Dispensers are also ideal for stationary tanks, barrels, pipeline faucets. 4 oz., 6 oz. and 7 oz. sizes packed imprinted with assorted stock safety messages—or your own message to order.





GET THE FULL STORY—Write us today for this new folder which gives full details on imprinted AJAX Cups and equipment.

United States Envelope Company

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15 DIVISIONS FROM COAST TO COAST

C-1C

IT'S YOUR BUSINESS . . .

Continued from page 16

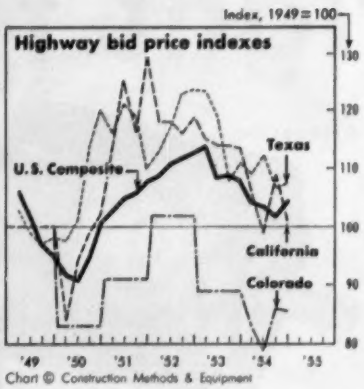


Chart © Construction Methods & Equipment

were mixed during the fourth quarter of '54, those in so far are all higher than their lows for the year (see chart).

The Bureau of Public Roads Composite Mile Bid Price Index for federal-aid highway projects rose 2.1% in the fourth quarter of '54, after dropping 6.4% during the preceding four consecutive quarters. Furthermore, the index for the final quarter is slightly above the first quarter and the highest during 1954.

In California, bid prices dropped 7.5% in the last quarter of '54, according to the State Highway Department's index. This drop cancelled out most of the third-quarter recovery, but the index is still 1.7% above the second-quarter low. Highway prices were more stable in Colorado during the last quarter of '54, although they dipped less than 1% below the third quarter. However, the fourth quarter index is 8% above the low second quarter.

Unit prices bid on Texas state highway jobs during the last quarter of '54 average 0.7% higher than in the third quarter, which is the low for the year.

The chart shows that highway construction went for bargain prices during most of '54. The California, Texas and BPR U.S. Composite bid price indexes in the fourth quarter of '54 are only a little higher than their 1949 level. In Colorado, the index is 14% lower than the 1949 average.

Uptrend to Come?

Indications are that these bargain prices are not going to last much longer. The California Highway Division, for instance, doubts that the fourth-quarter drop of 7.5% in its index means a con-

Announcing
The New UNIT Model 510
Challenger



DESIGNED with a BACKGROUND of 3/8 YARD EXPERIENCE

Evidence of highest quality engineering and construction includes alloy steels and forgings • anti-friction bearings • modern transmission design with involute splines to add strength and reduce wear • straight-in-line engine mounting with torque converter • trunnion supported tapered drums to eliminate bending stress on drive shafts • easily accessible hydraulic clutches • minimum number of main machinery gears enclosed in one-piece cast gear case • force feed lubrication • self-aligning replaceable hook shoes distribute applied pressure over maximum area • interchangeability of parts simplifies maintenance, cuts costs. All these UNIT advantages mean more profitable operations for you.

Why it's BEST *to* INVEST *in modern* UNIT *models*

Because each feature has been proven to contribute substantially to the Life, Performance and Efficiency which have made present and previous UNIT products readily acceptable.

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Milwaukee 14, Wisconsin

Please send me your new Bulletin on the UNIT CHALLENGER Model 510.

Name.....

Address.....

City.....

State.....



Malsbary Model 250 cleaned this D4 in less than 60 minutes. Note compact, hard-hitting stream and absence of work-hiding steam.

Put Pressure on Your Cleaning Costs with the New, Improved Malsbary Model 250

20% Boost in Pressure and Volume, Blasts off Grease, Tar, and Caked Dirt Twice as Fast as Steam Vapor Cleaners

Tough equipment cleaning jobs require lots of hot solution and real impact. There's plenty of both in the new Malsbary 250 HPC (high pressure combination) cleaner. Top pressure has been boosted 20% to 300 p.s.i., volume upped to 360 g.p.h. This pressure delivers cold water, hot solution (steam), or hot rinse with an explosive impact that blasts away stubborn asphalt or caked mud and grease other cleaners can't touch. In addition, you get wet steam and hot water for such jobs as cleaning and degassing tanks, thawing, or concrete mixing in zero weather.

Two-way Pay-off

The Malsbary 250 does any cleaning job twice as fast as a steam vapor cleaner; and does most jobs 4 to 10 times faster. Cleaning a D8, for example, takes 1½ to 2 hours with the Model 250 compared with 8 hours for steam vapor cleaner. You save 6 hours labor, and gain 6 hours of tractor working time. Where you're operating or renting equipment fleets savings in equipment downtime alone on just a few cleaning jobs often more than repay the cost of a Model 250.

Why settle for a half-way cleaner when a Malsbary 250 can cut your cleaning costs in half? For proof, ask your Malsbary dealer to demonstrate on your job now... or write us today for the 8-page catalog describing the new, improved Model 250.

62

MALSBARY MANUFACTURING CO.

SINCE 1921

Room C3, 845 92nd Ave., Oakland 3, Calif.

IT'S YOUR BUSINESS . . .

Continued from page 20

tinued downtrend in bid prices during the near future. On the contrary, it believes that the factors which helped offset rising labor costs have come into balance and that further labor cost increases must show up in higher bid prices during the immediate future.

The Division believes this will happen even though it is letting a large number of large contracts above the million-dollar mark. While competition tends to depress unit prices, contractors in general have used up most of their cost-cutting possibilities.

SOME BIG CONTRACT AWARDS OF THE MONTH

The Lummus Co., 385 Madison Ave., New York 17, N.Y. Design and construct ammonia plant, Pine Bend area, Dakota Co., near Hastings, Minn. for St. Paul Ammonia Products Co., c/o contractor. $15,000,000.

P.&M. Construction Co. 545 North Hague Ave., Columbus, Ohio. 1,300 three-bedroom factory-built homes, Livingston Ave. and Hamilton Road, to be known as "Shady Lane Park," Columbus, Ohio, for G. E. Bass & Co., 2715 North State St., Jackson, Miss. $15,000,000.

Matthew H. McCloskey & Co., 1620 Thompson St., Philadelphia. General contract for 22-story, 1,000-room hotel on "Penn Center," Philadelphia, for the Sheraton Corp. of America, 1 Court St., Boston, Mass. $15,000,000.

General Electric Co., River Road, Schenectady, N.Y., 16 generators in United States half of Barnhart Island Powerhouse on the St. Lawrence power project for the Power Authority of the State of New York, 270 Broadway, New York 7. $13,210,721.

Starrett Brothers & Eken Inc., 63 Wall St., New York 5, N. Y. Bank and office, 5th Ave 44th and 45th Sts., New York City, for the Bank of New York, 530 Fifth Ave., New York City. $10,000,000.

The Fluor Corp. Ltd., 2500 Atlantic St., Los Angeles, Calif. Nitrogen fixation unit and ammonia plant at Hammond, Ind., for Calumet Nitrogen Products Co., c/o Standard Oil

(More Big Jobs on page 214)



Every Minute of Every Day . . . a Richmond Product is Saving Time and Money . . . on Every Kind of Concrete Construction.

Illustrated are 25 of the products perfected by RICHMOND, pioneer in the concrete construction industry.

This is only a "drop" in the RICHMOND bucket! Our complete line is the largest in the field.

All, have one purpose: to help you do your job with greater speed, safety and savings!

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Behind Engine . . .
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plus **5** *of the*
EXCLUSIVE FEATURES
THAT GIVE YOU LOWEST CUTTING COST PER FOOT!



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Self-Propelled.
A Clipper Model
to fit Every Budget
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Clipper BLADES For Best Results

- **CLIPPER "GREENCON"**
  Savings you never dreamed of—up to 80%! The original Reinforced Abrasive Blade that knifes through green concrete with aggregate of limestone, coral, or steel mill slag. "Try them on your next job."
- **CLIPPER DIAMOND**
  A Blade for any job—any aggregate—every saw! Choose your Clipper Diamond Blades from a wide variety of specifications to cut green or old concrete with outstanding speed and economy.

By the Makers of Clipper Masonry Saws

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LOOK AT THESE 5 FEATURES

1. 4 Wheels with 3-Point No-Bind Blade Suspension
2. Self-Propelled with Abrasive-Coated Drive Wheels
3. Positive Screw Feed
4. Patented Water Application
5. Dashboard Controls

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Genuine Clipper Products Are Sold Only Direct. Immediate Shipment from Factory Branches in Principal Cities, Coast to Coast. Mail Coupon for Same-Day Service.

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FOR Best Performance Demand the Saw with All These Features:

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3. Wet-or-Dry Pump—With Patented Water Application supplies water to the cutting edge, where it should be.
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Model HD
Wet or Dry Cutting.
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Clipper BLADES **CUT ALL MATERIALS!**

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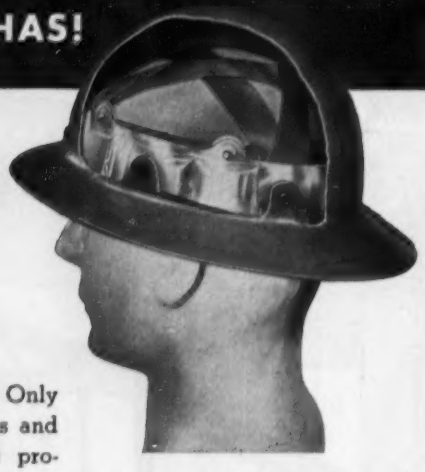
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HATS HAVE THAT NO OTHER SAFETY HAT HAS!



It takes more than a strong, tough hat shell to provide full head protection—*both external and internal!* Only Willson Super-Tough® Hats and Caps give you that *extra* protection!

And that *extra* protection and wearer comfort is possible because of this unique, patented geodetic crown strap and pneumatic head band, developed by Cornell Aeronautical Laboratory, Inc.

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JOB TALK . . . Continued from page 12

a joint venture of the Atlas Tile and Marble Works, Long Island City, and the P. J. Carlin Construction Co., New York.

What Width Track Shoes?

Probably every earthmoving contractor realizes that it pays to choose the right width of track shoes on his crawler tractors for specific jobs. The proper selection may mean more trips per day, one tractor doing more work alone or staying on top of soft ground and doing a job in good style instead of sinking down and wallowing along, or perhaps getting bogged to a standstill.

The Caterpillar Tractor has some helpful information on the subject. Here is what the engineers say:

"What causes the track shoe to have such an influence on work efficiency? Traction is the answer! Traction that has been described as being influenced by the strength of the soil more than any other soil characteristic. Here are some interesting facts to remember about soils.

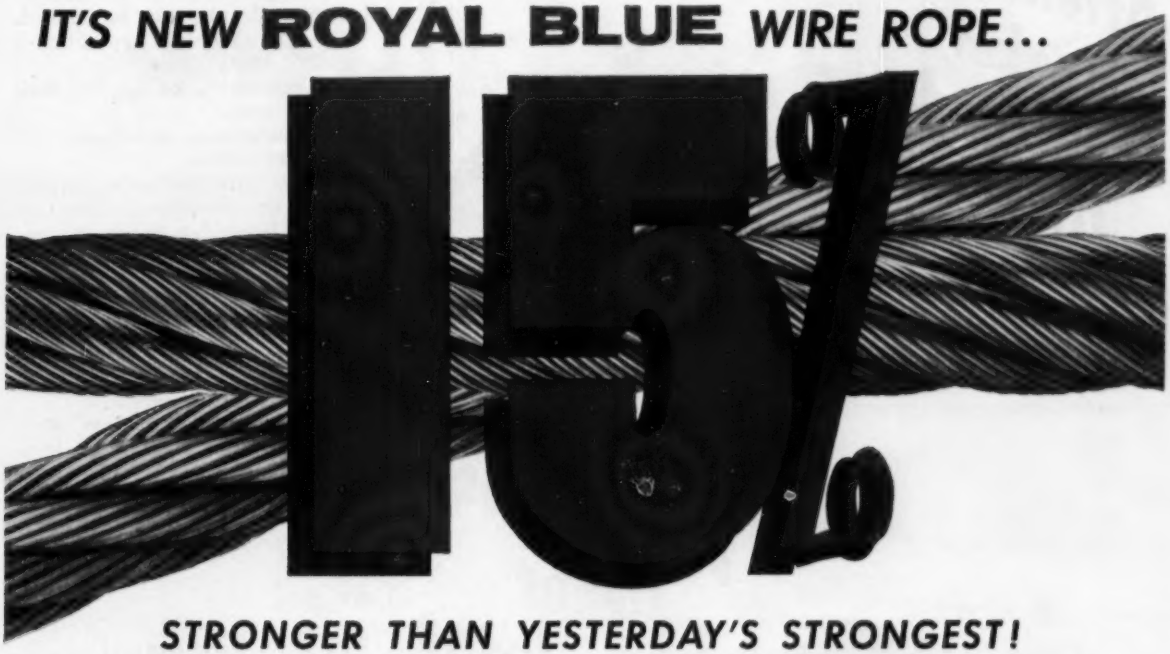
"Basically, there are two principal types of earth surfaces with which the contractor comes into contact. One is plastic soil, such as clay, which is composed of fine particles bound together into a cohesive mass under normal moisture conditions. The other is frictional soil, such as sand, which is composed of particles larger and less cohesive, even when wet. Depending on which of the two factors is the more predominant, cohesion or friction, the soil is more or less sensitive to ground contact or ground pressure.

"Plastic soils tend to have sufficient shear strength, regardless of vertical load, to permit the use of wider tracks for better traction and improved flotation. On the other hand, the shear resistance of frictional soils increases, as weight increases per unit of track area in contact with the ground. Traction without good flotation is useless. Flotation depends not only on ground pressure, but also on the form and shape of the area under the tracks.

"How does this affect the choice of track shoes? It should be remembered that the shear area of the track can best be varied by changing the track width. Before allowing for the requirements of

(Continued on page 28)

ROEBLING ANNOUNCES TO AMERICAN INDUSTRY IT'S NEW **ROYAL BLUE** WIRE ROPE...



STRONGER THAN YESTERDAY'S STRONGEST!
VASTLY INCREASES — EVEN DOUBLES — SERVICE LIFE!

WITH THE DEVELOPMENT of Roebling type 1105 wire — the finest high carbon rope wire ever produced — Roebling leads the field in bringing American industry the unprecedented efficiency and economy inherent in its new **ROYAL BLUE** Wire Rope.

★ Roebling is ready to supply the new **ROYAL BLUE** Wire Rope in EVERY DIAMETER from ¼" to 3½" and in EVERY STANDARD CONSTRUCTION with an independent wire rope core.

★ Roebling guarantees **ROYAL BLUE** Wire Rope to be at least 15% stronger than any standard wire rope of the same size and construction formerly available.

★ Roebling **ROYAL BLUE** Wire Rope has unequalled resistance to impact, crushing, abrasion and fatigue.

Write us for the full story on **ROYAL BLUE** Wire Rope, or contact your distributor or nearest Roebling branch office.

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FROM THIS..



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A low-cost Greer Accumulator makes the big difference!

New Hydraulic Component Ends Damage from Shock and Vibration — Helps Your Bucket Loader Operate at Top Speed!

Shock and vibration is common to all hydraulically operated bucket loaders. This condition occurs when a loaded bucket is moved and stopped suddenly, or travels over rough ground. Since hydraulic fluid is practically incompressible, the vehicle and driver absorb the full impact and pounding. The answer to this problem lies in the Greer Accumulator and its tremendous ability to absorb shock and vibration. In test after test with all types of bucket loaders, this fact was proven: you actually *see* and *feel* the big difference with the shock-absorber action of the Greer Accumulator. Install it now and benefit these important ways:

Get Faster, Smoother Operation! Greer Accumulator smooths out loader performance for greater on-the-job speed. Work goes faster, no slowdowns.

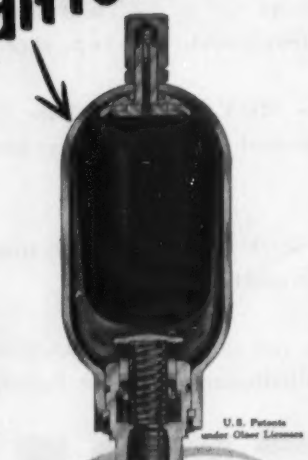
Cut Downtime and Maintenance! Shock that damages components and causes structural strain is eliminated. Parts last longer, perform better, too.

Step Up Operator Output! Your driver is free from the tiring effects of heavy shock and vibration. It adds to his comfort, safety and efficiency.

Learn how a simple pipe-tee and hose connects Greer Accumulator to system quickly, easily, and at low cost. Call or write your dealer for brochure.

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Be sure your next bucket loader is equipped with one!

JOB TALK . . . Continued from page 26

flotation and steering, the following general rules can be applied.

For all-purpose operation—standard track shoes

For operation on plastic soils—wider shoes

For operation on non-plastic soils—narrower shoes

"Special jobs also have a definite bearing on determining the best width of track shoe to use. For instance, when logging in a certain area, the logger may prefer that the tracks dig their way through forest litter to solid footing. Here maximum flotation would be considered a disadvantage, and standard track shoes would be preferable.

"Rock work is another place where maximum flotation would be considered a disadvantage. Narrower shoes tend to gain better penetration.

Kitimat Surplus Equipment

WE NOTICED FROM A NEWS RELEASE recently where a big machinery firm, S & S Machinery Company, Brooklyn, N. Y., had been named sales agents to dispose of $24,000,000 worth of surplus construction and mining equipment used by the Aluminum Company of Canada on the Kitimat project in British Columbia. We were interested because $24,000,000 is still a lot of money, but more interested because this firm's primary business is selling used machinery tools, etc.

We contacted Louis Srybnik, a partner, in an effort to learn just how they planned to dispose of all this equipment. His answer indicated to us he'll have little trouble disposing of the equipment.

"First, we don't plan to get rid of this equipment in a day or so. It might take up a year . . . maybe more. We are not forgetting the used equipment market today is bursting at the seams. We hope to protect dealers and contractors on every transaction. We don't plan to 'invade' any territory with this used equipment.

"We'll sell it, or we will lease it or we will even barter for it. One thing we don't want to have is an auction.

CM&E intends to watch this equipment sale as it develops and we'll try to keep you posted from time to time.

HOW TO DO 4 JOBS WITH 1 MACHINE



Here's a borrow pit a half-mile from the water works in Kansas City, Missouri. 80,000 yards of fill are being hauled from it, to be placed around the water works' settling tanks. A housing project will go onto the leveled area.

Doing four jobs at once in this pit is a CAT* Diesel No. 112 Motor Grader.

It scarifies constantly—since the dirt in the pit is hard clay. It push-loads a No. 15 Scraper. It keeps the borrow pit clean. And it grades the area as the job moves along.

Working with the No. 112 for Miller Brothers Construction Co., Kansas City, are two DW10 Tractors with No. 15 Scrapers, and a D7 Tractor with bulldozer.

"In the eight years we've been operating," W. F. Miller says, "we've found our Cats to be our most durable and rugged machines."

One reason—in the case of the No. 112—is this: built and serviced *entirely* by one organization, the Cat Motor Grader is carefully balanced, *power* with *weight* with *speed*. Its engine, controls, and frame and circle assembly are all designed specifically to work with one another. This integral engineering—with matched components—helps give you that durability and ruggedness Mr. Miller is talking about.

There are other reasons, of course, and your Caterpillar Dealer will be glad to discuss them with you. Better still, ask him to demonstrate. That's really the best way to size up this big yellow machine.

And remember, your Caterpillar Dealer is always ready with prompt, genuine parts service, too.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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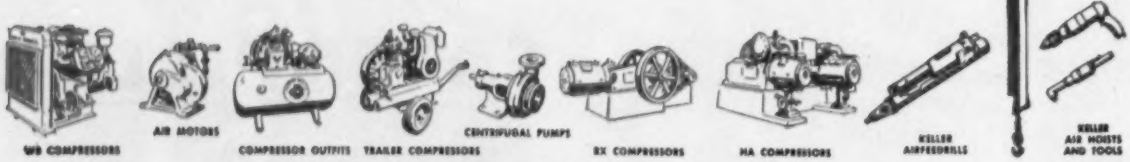
*Both Cat and Caterpillar are registered Trademarks—®

99% OF ALL CAT MOTOR GRADERS EVER BUILT ARE STILL IN USE

at Ambuklao--the rock



On this huge hydroelectric project, eleven Gardner-Denver 600-ft. Portables supply 6,600 cubic feet of air per minute for rock excavation, tunnel lining, access road building.



Gardner-Denver Company, Quincy, Illinois
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work goes Gardner-Denver

Contractors--

Guy F. Atkinson Company
Philippine Engineers Syndicate, Inc.

Project--

A 3-year construction schedule for Ambuklao hydroelectric project of the National Power Corp. in the Philippine Islands.

Rock Work--

One of the largest of all earth fill dams —two diversion tunnels—pressure tunnel—underground power station—open spillway—access roads.

Gardner-Denver Equipment on the Job--

11—600-ft. Portables
15—SF93 Drifters
13—JB11 Hydraulic Booms
12—URM99 Wagon Drills
10—FL48 Air Leg Drills
5—5" Centrifugal Pumps
3—10 x 3 x 10 Grout Pumps
1—WBQ Stationary Compressor
1—105-ft. Portable
1—Tank-Mounted Compressor
1—DS6 Drill Steel Sharpener
Also—Air Motors, Line Oilers and Drill Rods



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THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS FOR CONSTRUCTION, MINING, PETROLEUM AND GENERAL INDUSTRY

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KELLER TOOLS



paved by Schultz & Lindsay with this BLAW-KNOX "Complete Package"

The Blaw-Knox "Complete Paving Package" used by Schultz & Lindsay

● Cement Batching Plant ● Aggregate Batching Plant ● Precision Subgrader ● Self-Aligning Steel Paving Forms for Roads and Airports ● Steel Forms for Curb, Curb and Gutter, Integral Curb, and Median Dividers ● Concrete Spreader with Vibrating Attachment (also available with screed attachment) ● Concrete Finishing Machine

For your job, you can add

● Clamshell Buckets ● Concrete Buckets ● Base Course Pavers ● Road Wideners and Trench Rollers ● A "Complete Package" of ready-mix equipment, including Hi-Boy Trukmixers and one-stop Truck Mixer Loading Plants

● North Dakota started the ball rolling toward faster travel between Grand Forks and Winnipeg by awarding Schultz & Lindsay Construction Company the contract to pave 11.4 miles of State Highway 44. And the Fargo contractor kept the job rolling by using a Blaw-Knox "Complete Package" of paving equipment to step up the paving operation to a profitable, schedule trimming pace.

Wherever there's a big paving project . . . super-highway, toll road, expressway . . . or airport runway . . . you'll probably find a balanced team of Blaw-Knox units speeding the job. More and more contractors all over the country are taking advantage of the one-source, one-responsibility economies of Blaw-Knox "Complete Package" paving methods.

BLAW-KNOX

See your BLAW-KNOX distributor about "Complete Package" advantages

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION, Pittsburgh 38, Pa.
Offices in Principal Cities



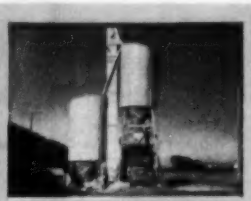
Blaw-Knox Aggregate Batching Plant used on "short-cut to Winnipeg".



Schultz & Lindsay's Multi-Poato 34E DuoMix Paver.

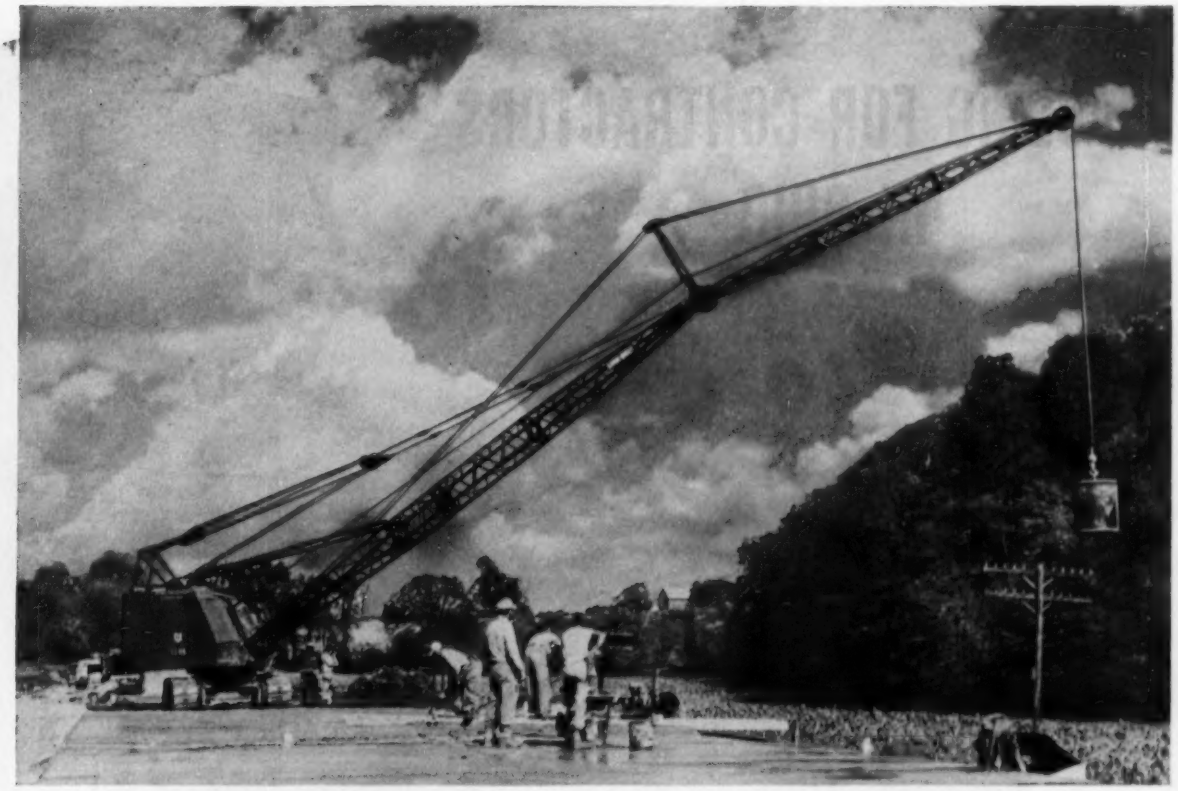


A loaded batch truck on the ramp over Schultz & Lindsay's Blaw-Knox Precision Subgrader, on the way to the paver.



Blaw-Knox Cement Batching Plant on the North Dakota State Highway job.

(Advertisement)



FAR REACHING, NEW LS-88 uses jib to spot concrete bucket on road job. Patented high gantry is raised and lowered under power, one of many optional extras.

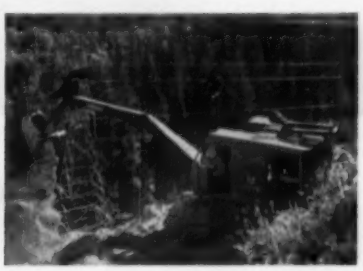
Long, wide and exceptionally stable crawler mountings and shoe widths are available to suit any heavy-duty, ¾-yard job. All clutches are interchangeable.



UP TO 25% MORE OUTPUT — Speed-o-Matic power hydraulic controls cut fatigue. No lag, jerk or strain.



AHEAD ON ½-YARD JOBS — It's the new LS-58, fastest, most powerful rig in its class, with "big-rig" features.



UP TO 99 NET HP FOR 1-YARD PROFITS — New heavy-duty LS-98. First time Speed-o-Matic in this class.

How to be AHEAD on every job

...use a Link-Belt Speeder! It's years ahead of the shovel-crane industry



TEAM up with the shovel-crane line that gives you the most productive capacity. It's the only line that offers you true power hydraulic Speed-o-Matic control, *and it's on every model.* Choose from many new models—with pace-setting improvements—in the ½ to 3-yard, 10 to 60-ton range. Equip for extra speed, power and work range—to bid successfully on more jobs—*and earn more on all of them.* See your Link-Belt Speeder distributor for complete facts, or write: Link-Belt Speeder Corporation, Cedar Rapids, Iowa.

LINK-BELT SPEEDER 13,771

Builders of a complete line of crawler and rubber-tired shovel cranes

HAULING FOR CONTRACTORS IN OHIO...



"NYLON CORDS CUT OUR ROAD



says EDGAR PITZER,

Fleet Supt., Hilltop Building Materials, Inc., Cincinnati, Ohio

"We haul ready-mixed concrete and other building materials averaging a gross weight of 20 tons. And delivering concrete we almost always travel at maximum load. We regard concrete as a semi-perishable commodity that must be delivered on time to meet rigid mixing-pouring schedules. That means we just can't afford to have road delays.

"Two years ago we started using nylon cord tires. On rugged rock and gravel conditions at building sites, sidewall strength is particularly important. Our records show nylons are standing up fine in spite of this brutal service. Even when rubber is scuffed off to expose the cords themselves, nylon tires hold up till the tire wall can be repaired. Nylons are giving us 30,000 to

YOU'LL FIND NYLON IN PASSENGER-CAR TIRES, TOO! Shock-absorbing nylon cords mean extra protection against blowouts . . . greater safety on any road.



DELAYS DUE TO TIRE TROUBLE 75%"

35,000 miles from original tread, and we expect 20,000 to 25,000 miles from each recap."

For ten years Du Pont and leading tire manufacturers have been working together to perfect nylon cord truck tires. Now actual road experience proves nylon to be the best protection yet against tire failure. Truck users' reports show nylon cord tires mean fewer road delays, more mileage, more recaps —lower cost per mile.

Nylon has greater tensile strength, flex and abrasion resistance than any other cord used in tires. Nylon virtually ends cord ruptures caused by bruise breaks. Moisture seeping through cuts doesn't damage nylon. Nylon can take the hottest road temperatures you'll ever encounter in normal operations.

Prove to yourself that nylon cord truck tires give substantially lower cost per mile. Ask your dealer about nylon cord truck tires today. (Du Pont makes nylon yarns, does not produce tires.)

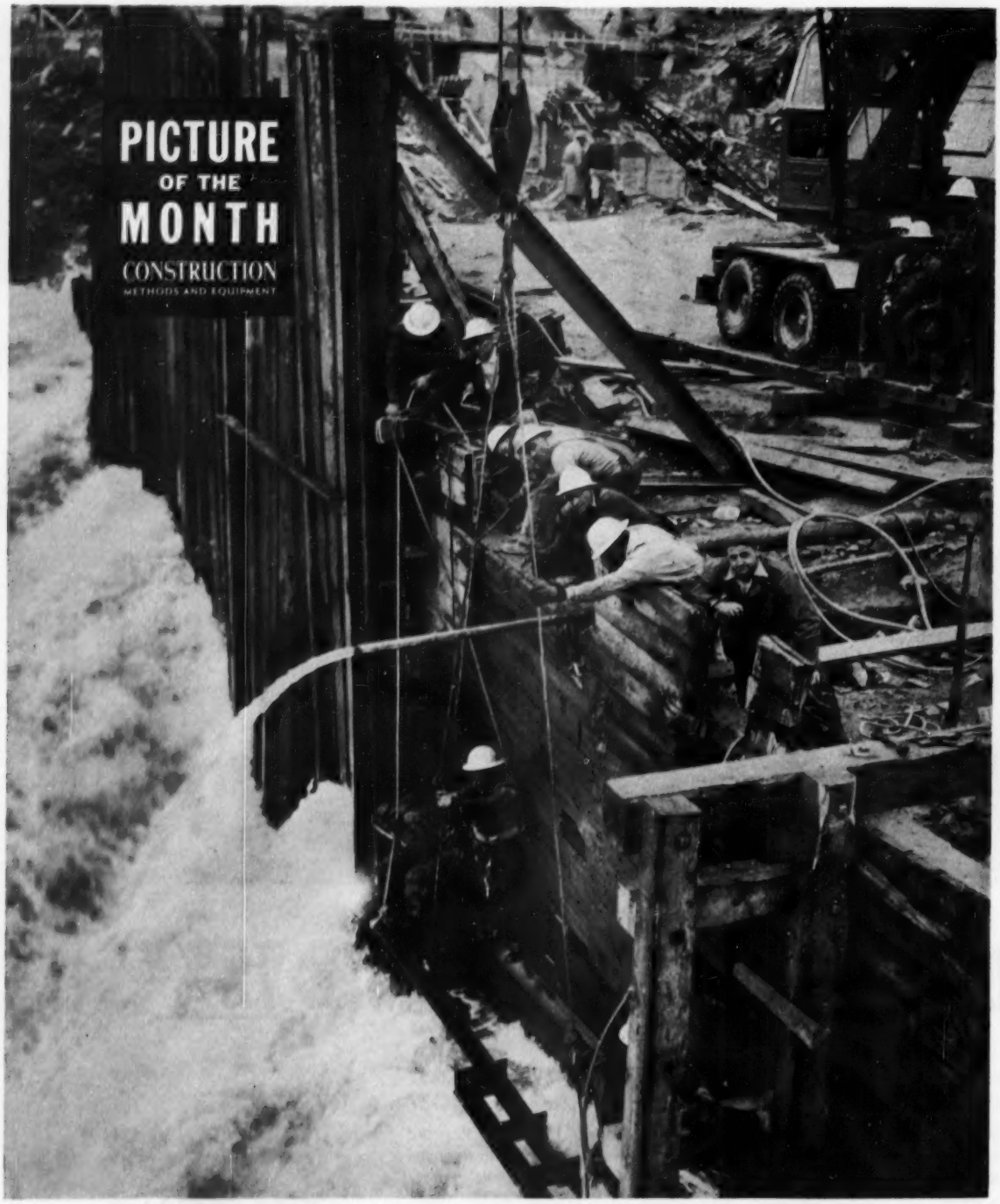
DU PONT NYLON FOR TIRE CORD

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BETTER THINGS FOR BETTER LIVING ... THROUGH CHEMISTRY

FREE BOOKLET on nylon tires—write for your copy. Textile Fibers Dept., Room 11506, E. I. du Pont de Nemours & Co. (Inc.), Wilmington 98, Del.



All in a Day's Work

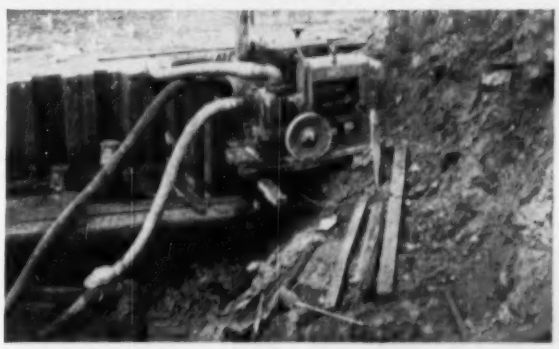
TURBULENT WATERS of the Connecticut River rush through the diversion channel at New Hampshire's Littleton Dam buffeting a weakened cofferdam. An emergency crew from Jenkins Construction Company quickly moves in to drive protective sheeting. But it's risky business. Suspended by ropes, a welder tries to place a steel waler in position to act as a guide for driving the sheeting. He doesn't make it the first few times, but finally the waler holds. Sheets are driven immediately and anchored with mass concrete poured in back. The strengthened cofferdam can now take the best the river has to offer. Morrison-Knudsen Company is general contractor for New England Electric System.

(Advertisement)

Jaegers prime faster, pull stronger, pump longer



SLOW PUMP SPEED HANDLES FAST WATER — Latrobe Construction Co., had to pave the slope of Loyalhanna Creek with 8" thick concrete 25' wide (equivalent to highway slab) when relocating U.S. 30, western Pennsylvania. This Jaeger 6P pump handled 1500 gpm of inflow at a speed of 1450 rpm. Ordinary 6" pumps, with smaller shells and impellers, require up to 1750 or 1800 rpm.



JAEGER PUMPS MAKE WET JOBS DRY — Two 4" and three 6" Jaegers were used to dewater the main pier cofferdam on this Milwaukee River bridge. Conservatively rated, they have capacity to dewater fast and sure-priming ability to keep jobs dry.



NEVER RACES TO PRIME — There's reason why this Jaeger 3P pump is being used to control seepage in this tremie sealed cofferdam on Frederick Snare Co.'s Raritan River Bridge job, N. J. Wherever priming is a problem, Jaeger's combination of inherent and jet priming actions, greater priming water capacity and ability to prime without racing the engine are valuable advantages.



PUMPS ALL THE WATER A 2" HOSE CAN HANDLE — This Jaeger hi-performance 2" pump delivers its full rated capacity of 10,000 gph when operating at only 2400 to 2550 rpm (as much as 400 rpm below the speeds of similar ordinary pumps). 28" vacuum at the intake flange is not unusual. Weighs only 180 lbs., measures only 24" x 21" x 26" high, as shown. On base, weighs only 160 lbs.

For complete information on Jaeger pumps from 1½" to 10" in size, see your Jaeger distributor or send for Catalog P-4.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

COMPRESSORS • LOADERS • TRUCK MIXERS • CONCRETE MIXERS • PAVING MACHINES



READY TO ROLL, the stripped-down American 300 Series Truck Crane owned by the Moore Dry Dock Company can travel over any highway in California. By using an ingenious "possum belly" trailer, the unit's total weight is distributed over five axles, meeting road limits easily. This speeds production and cuts costs.

"STRIP-EASE" SOLVES HIGHWAY WEIGHT PROBLEM

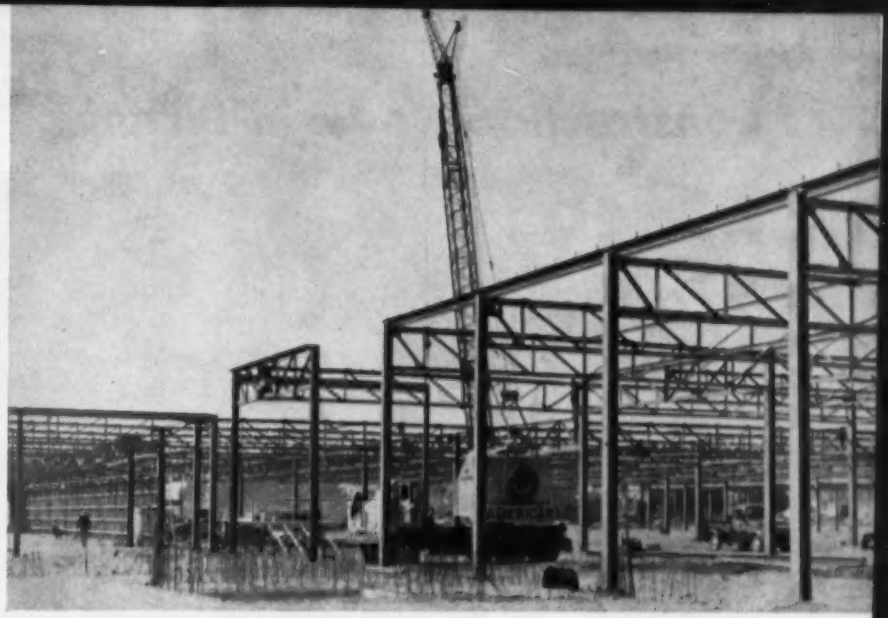
Highway weight restrictions, which can tie up heavy equipment on one job when it is needed on another, plague contractors in many states. Fortunately for American owners, The American 300 Series Truck Crane can be "stripped" speedily and easily. The Moore Dry Dock Company of California, for instance, has found that they can load the boom and counterweight on their specially-designed trailer in a very short time. Thus, by dividing up the weight, the unit can meet all legal axle load limits for any highway in the state. This fact means that the powerful, versatile crane can be hustled from job to job without the delay of obtaining special permits, saving time and money for Moore Dry Dock.



SMOOTHLY AND EASILY the American 300 Series Truck Crane uses its own mechanism to remove its counterweight, (1). Then, it lifts the counterweight, (2); and lowers it into the "belly" of the trailer, (3). With the boom lowered into its cradle on the top of the trailer, the American Crane is ready to move to its next job.

(Advertisement)

EXTREMELY MOBILE and powerful, the American 300 Series Truck Crane is shown setting steel on a new building project in California. For precision setting of steel, the American Crane has power-controlled boom lowering. Boom lowering speed is controlled by the engine speed. That way, it's safe, fast and automatic and it works independently of the three other drums. Because its front ends are interchangeable, the American crane can be used for a variety of jobs—crane, shovel or back hoe—with a minimum of effort.



UNQUESTIONABLY the leader in locomotive cranes, American 25 to 80-ton DiesELectric Locomotive Cranes cut labor and maintenance costs to rock bottom with diesel efficiency. Operating records prove that American DiesELectrics can write off their cost in five years or less. Small wonder that for generations, American locomotive cranes and other high-production American products have been first choice on the world's biggest and toughest jobs.



ACCURATE ALIGNMENT of all parts in American machines is assured because American completely controls manufacturing from the raw materials to the finished product. Shown is part of the turret lathe group, actually a small segment of American's complete machining facilities. Nearby, for instance, are big traveling radial drill presses used for jig boring giant carbodies after fabrication to assure perfect gear and shaft alignment. For full information on the many advantages offered you by high-production American Crawler and Truck Cranes, see your American distributor or write American Hoist & Derrick Co., St. Paul 1, Minnesota.



700-6-10

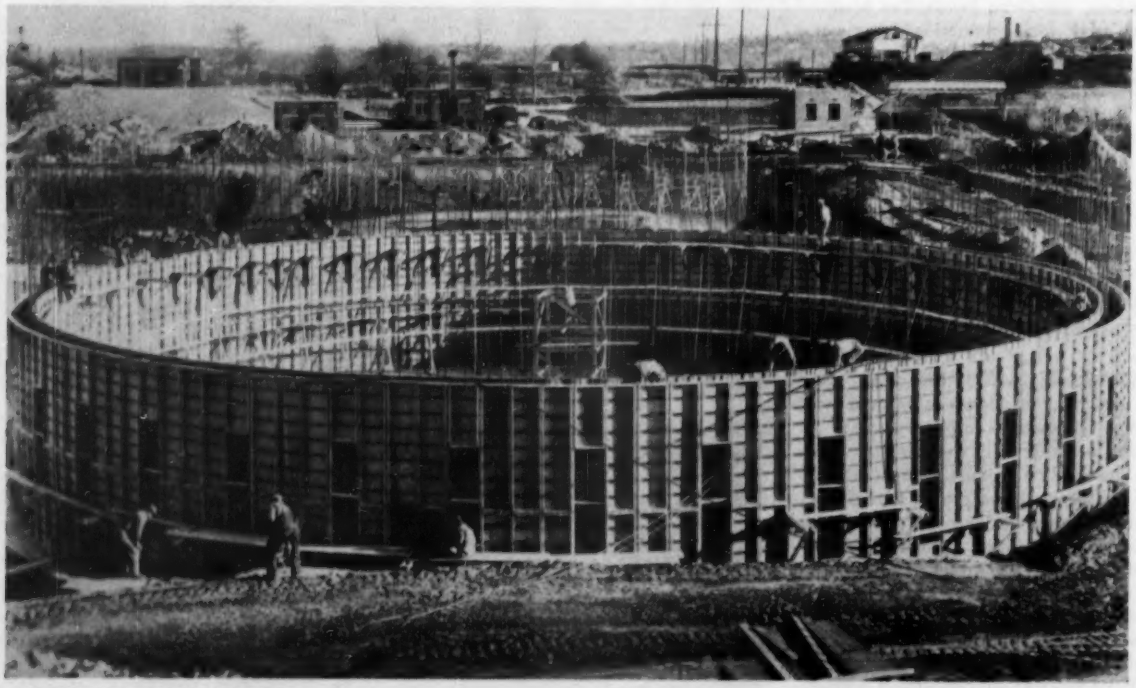
Construction News in Pictures



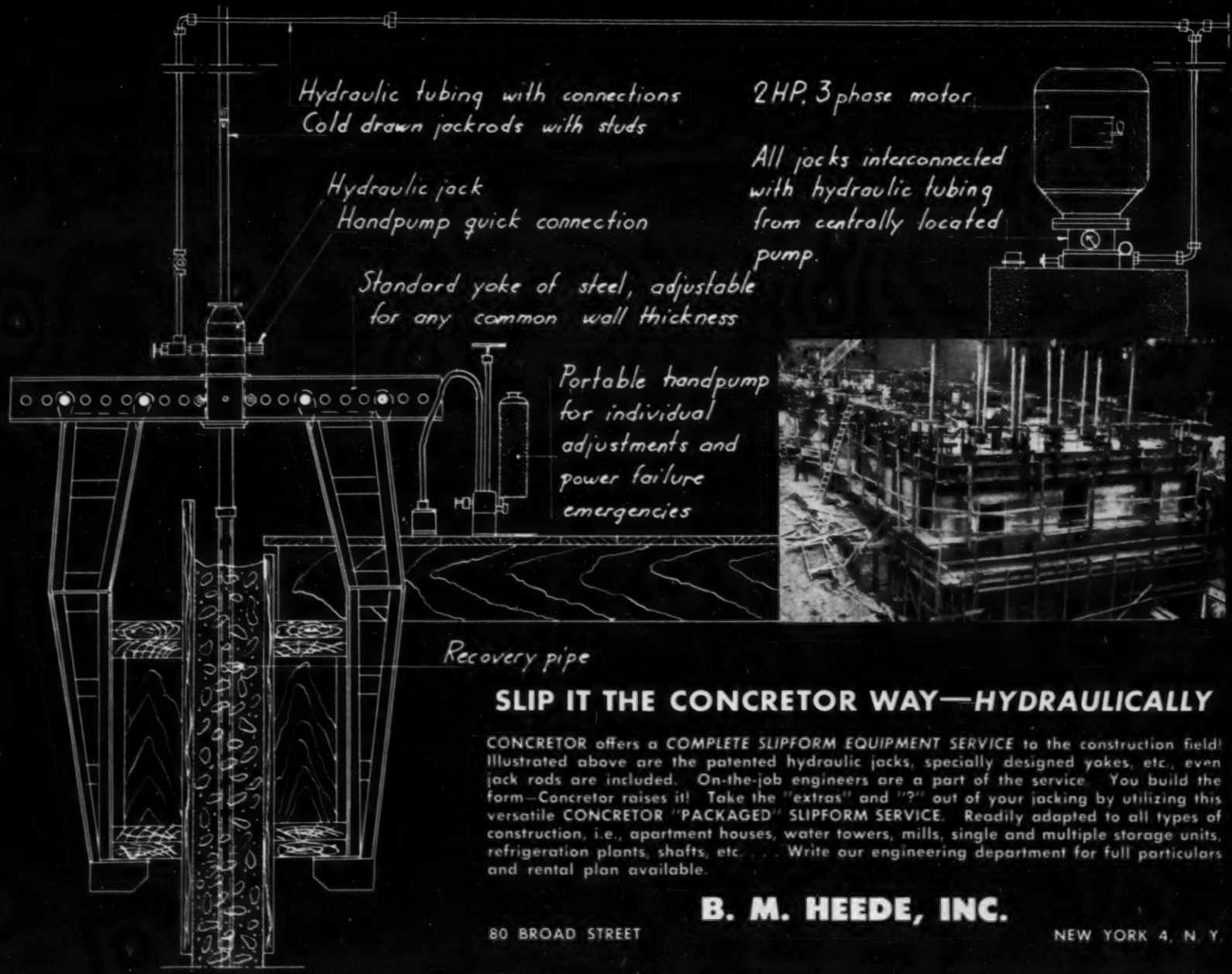
PIPE FOLLOWS EXCAVATION CLOSELY— Sanitary and storm sewer construction in Fridley, Minn., in an area where water table is 7 ft below surface, keeps Griffin Wellpoint system in almost constant operation. Pump and Lima Paymaster crane handling 72-in. pipe are powered by General Motors diesels.



IN HOT SPOT— International TD-9 with Drott skid shovel loads out "Red Dog" slate, a smoldering by-product of deep mining operations, for roadbed use in Beckley, W. Va. Spontaneous combustion fires generate 300-deg temperatures on surface, subject tractor and operator to unusual hazards.



MAKING THE ROUNDS— Workmen erect forms and set reinforcing for one of six circular sewage digester tanks, each 100 ft in dia with walls 29 ft high, for Birmingham, Ala. Pour openings are left in the Symons form panels to limit height of drop. First lift will be 16 ft high; second one, 13 ft. Contractor is Sullivan, Long and Haggerty of Birmingham.



SLIP IT THE CONCRETOR WAY—*HYDRAULICALLY*

CONCRETOR offers a *COMPLETE SLIPFORM EQUIPMENT SERVICE* to the construction field! Illustrated above are the patented hydraulic jacks, specially designed yokes, etc., even jack rods are included. On-the-job engineers are a part of the service. You build the form—Concretor raises it! Take the "extras" and "?" out of your jacking by utilizing this versatile CONCRETOR "PACKAGED" SLIPFORM SERVICE. Readily adapted to all types of construction, i.e., apartment houses, water towers, mills, single and multiple storage units, refrigeration plants, shafts, etc. . . . Write our engineering department for full particulars and rental plan available.

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Best bet for better bids–

SPECIFY GENERAL MOTORS DIESEL POWER

in all your construction equipment

You can *specify* General Motors Diesel power in over 750 different models of equipment built by over 150 manufacturers.

When you do you'll get fast-acting, quick-accelerating 2-cycle Diesel power that will help you do more work, faster, at less cost.

More work, because a General Motors Diesel is a "high torque" engine. And torque—as much as developed horsepower—measures an engine's working ability.

Faster work, because a GM 2-cycle Diesel, with its responsive governor, efficient fuel injectors and power at every piston downstroke, gives you instant pickup in response to changing loads.

Less cost, because a General Motors Diesel burns fewer gallons of safer, cheaper fuel. Also a GM Diesel costs less to buy and the parts cost less than for other Diesels of comparable ratings.

No matter where your contracts take you, you'll find GM Diesel distributors ready to supply fast service and quick delivery of low-cost factory parts. Check your local distributor today for full details on dependable, low-cost Diesel power for your equipment, or write direct for more information.



PURCHASED 23 GM DIESELS SINCE 1947

This LeTourneau-Westinghouse Tournapull is part of an earth-moving fleet used by the Lone Star Steel Company of Lone Star, Texas. The Company, one of the largest producers of steel in the Southwest, has been a consistent user of General Motors 2-cycle Diesel engines in several different kinds of earth-moving, construction and mining equipment for better than seven years.

GM
GENERAL MOTORS
DIESEL POWER



SAVING $170.00 A MONTH IN FUEL ALONE

United Construction Company cut fuel costs over 60% and reduced maintenance costs when they *switched* from gasoline to GM Diesel power on their Moretrench pumps. The GM Diesels worked 24 hours a day, 7 days a week—eliminated stops formerly required to pull and service spark plugs every three days and to replace them every three weeks.



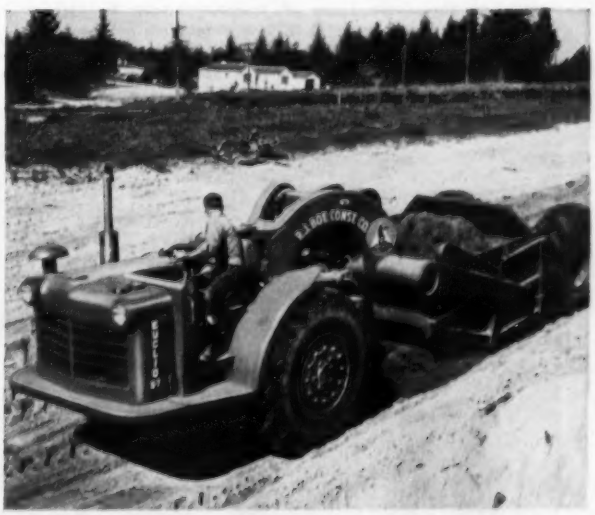
13,000 HOURS—NO REPAIRS

General Contractor A. H. Famularo bought this GM Diesel-powered Northwest 25 Crane in April 1947. In 13,000 hours he never had an injector out, never touched the head or pan. He burns 16 gallons of low-cost Diesel fuel in 8 hours—specified GM Diesel power "because it was economical . . . and has proved to be reliable."



25% MORE WORK; FUEL COSTS ⅓ LESS

Killough Construction Company has *standardized* on GM Diesel power for their portable rock crushing plant in Kansas. The firm uses six GM Diesels to run a hammer mill, operate conveyors and screens, a primary crusher and two shovels. One shovel, converted from gasoline to GM Diesel power, now does 25% more work on one-third less fuel cost.



"WONDERFUL PERFORMER"

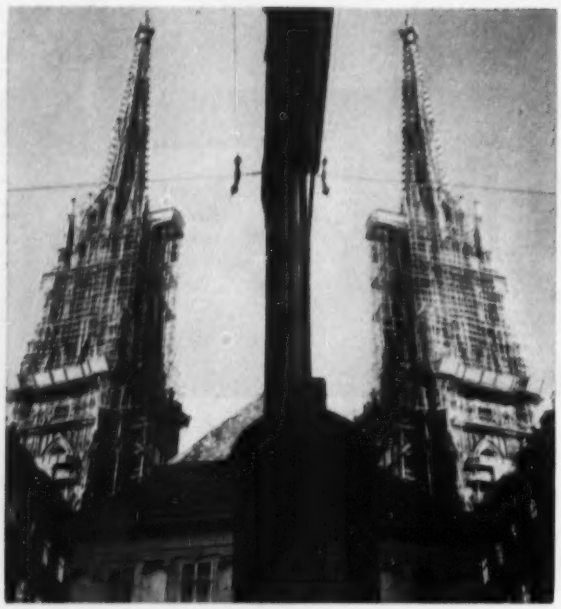
This GM Diesel-powered scraper hauled nine yards every four minutes on a recent job for the R. J. Boe Construction Company. Contractor Russell Boe likes the "wonderful acceleration and trouble-free performance GM Diesel power gives me." He says, "All you need to do is keep water, oil and clean fuel in that GM Diesel and you'll get a good day's work out of it."

DETROIT DIESEL ENGINE DIVISION

GENERAL MOTORS • DETROIT 28, MICHIGAN

Single Engines . . . 30 to 300 H.P. • Multiple Units . . . Up to 893 H.P.

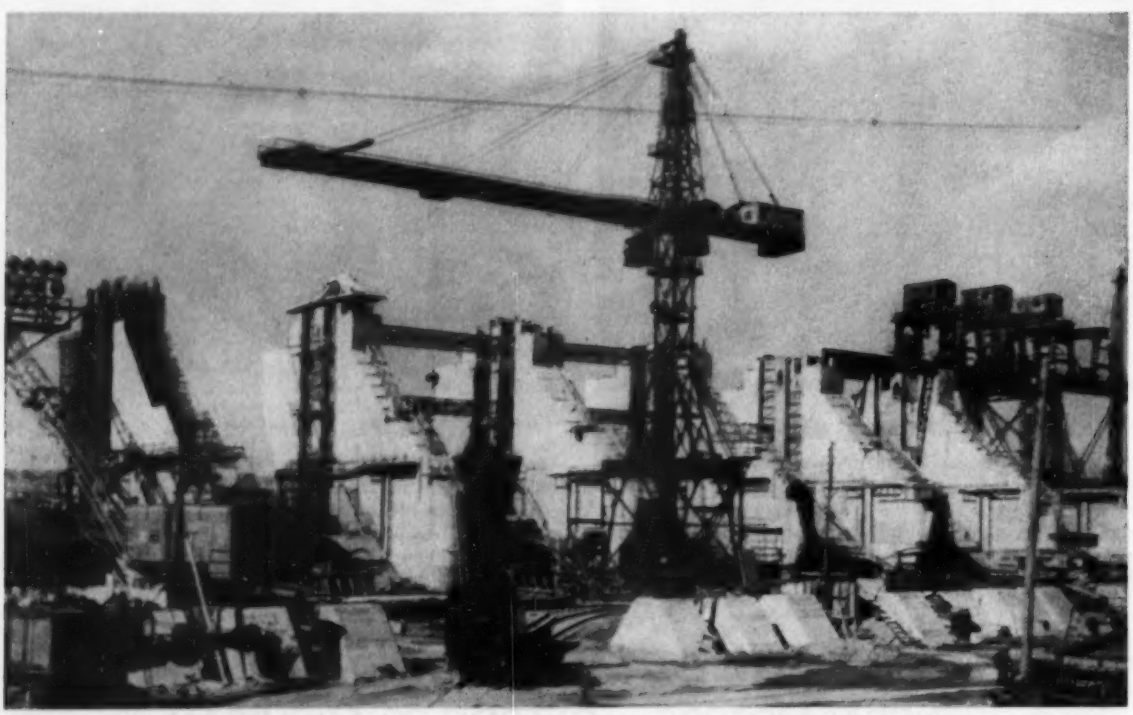
CONSTRUCTION 'ROUND THE WORLD



LOOK-ALIKE TOWERS—These towers should appear identical as the photo is really a stereotype of the steel scaffolding surrounding the single tower of Vienna's famous St. Stephen's Cathedral. The tower begun in 1290, is undergoing a 10-yr restoration program to repair damage caused by 600 yr of weather, plus artillery bombardments and fire from the recent war.



LIFELINE PIPELINE—Poverty stricken Middle East will soon benefit from the waters of the River Yarkon which flows through Israel, thanks to this 225-kilometer pipeline under construction. Each section of the pipeline is 66 in. in dia, 16 ft long and weighs 11 tons. The project was started in 1950, and to date more than 60 mi have been completed. The pipeline will terminate at Negev.



RUSSIAN SPILLWAY JOB—This photo recently released by the Soviet Union shows a general view of the dam spillway at the huge Gorky development. No details accompanied the photo but study reveals strong influence of American and European equipment and design. Different is hammerhead type of crane, small cranes and method using steel to reinforce concrete.

KOHLER ENGINES

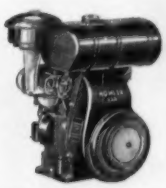
4-CYCLE • AIR-COOLED

Modern design, air-cooled Kohler Engines from 2.5 to 26 H.P. offer a wide range of power to fit all applications requiring a reliable and economical power source.

Kohler branch offices are located in eighteen principal cities. Sales and service distributors, throughout the country have parts available and are ready to assist you in selecting a Kohler Engine best suited for your requirements. Write for information.



K90—2.5 to 3.6 H.P.



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WEST VIRGINIA
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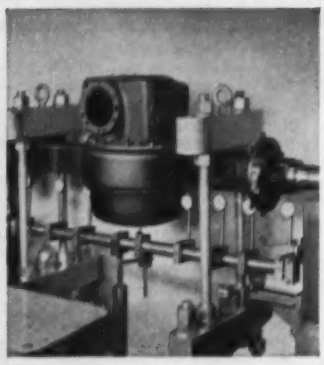
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Kohler Co., Kohler, Wisconsin • Established 1873

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This is the "Torture Chamber"... Here TDA proves axle quality!

An axle is picked out of stock—then subjected to such tests as a simulated "chuckhole" shock every 4 seconds, 24 hours a day for months! Or a "bend test" on an axle housing for 1,000,000 cycles. Or an axle shaft "twist test" of 14° backwards and forwards 36 times a minute, 24 hours a day, days on end. We even simulate 500,000 miles of the toughest driving situations in just a few days—or invent a test like driving uphill with a full load from California to New York nonstop! *There's no other testing like it!*

WE HIT 648,000



in the famous, one-and-only indoor proving ground!

We give axles a merciless beating! Equal the worst possible operating conditions. Then throw in some devilish tests of our own!

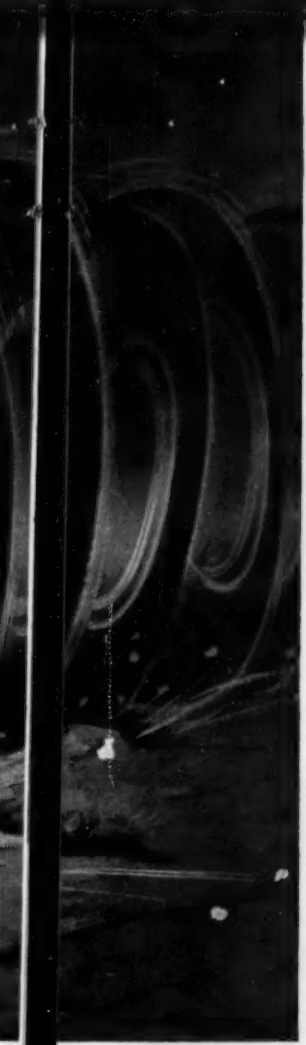
It's without equal! Nowhere else does such murderous torture show you *in advance,* how an axle is built to stand it on the job!

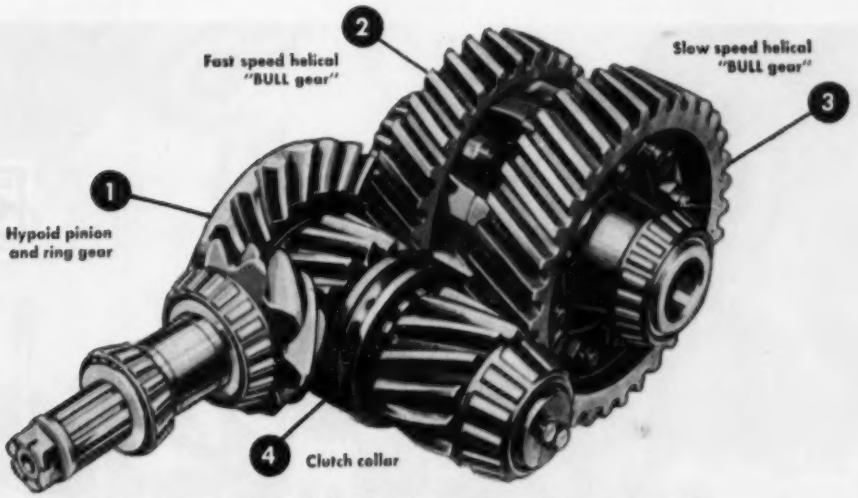
We've condensed a multi-thousand acre proving ground into one room in the Timken-Detroit "Torture Chamber." Here, our engineers can put over 50 years of experience to work for you —unsurpassed experience, obtained in building axles for all types of trucks, buses, trailers, farm machinery. Here, we can give stock axles and gearing "the works" *indoors,* to any *outdoor* operating condition—under scientific control and analysis.

How do you benefit? In longer axle life, less maintenance, repairs and downtime; lower operating costs. That's why Timken-Detroit axles are the choice of leading manufacturers and operators.

Meet our "Torture Tester"! With graphs showing speed and torque performance under any operating conditions he chooses—with special dials, recorders and electronic devices—he actually *drives* axles with scientific accuracy from his chair!







EXCLUSIVE DOUBLE-REDUCTION DESIGN...
gives TDA 2-speed axles far greater gear ratio "spread"!

Unequalled Flexibility! Only Timken-Detroit 2-Speed Axles are available in *three* different ratio "spreads" to meet any transmission-engine combination: 28%, 37% or 49%. Unlike ordinary designs that are limited to 37%, this Timken-Detroit Axle selection may be obtained simply by changing the low speed helical gear set.

How TDA 2-Speed Principle Works: A husky hypoid ring gear and bigger, stronger pinion set (No. 1 above) provides the *first step* of the total gear reduction for both fast and slow ratios. Two large, heavy-duty helical gear sets provide the *second step*. Both sets are of balanced size and capacity. One set (No. 2) is for fast speed—the other (No. 3) is for slow speed. The clutch collar (No. 4) moves to left or right to engage one helical pinion or the other. The helical pinion not in use idles.

The Result: Complete elimination of small, complicated parts and midget-size gears! Larger hypoid-helical design gives more teeth in contact—reducing load per unit of contact area—for more positive, quiet operation. Bearings are larger. There's longer engine and truck life. When you divide the total gear reduction, you double its life expectancy. TDA gears operate in either ratio *indefinitely* without overheating.

"CHUCKHOLES" A MONTH

Timken-Detroit Axle

TIMKEN Detroit AXLES
TIMKEN-DETROIT AXLE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
DETROIT 32, MICHIGAN
The Accepted Standard
TRADE MARK REGISTERED

"TORTURE-TESTED"
to Save Money on the Job
World's Largest Manufacturers of Axles for Trucks, Buses and Trailers
Plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York • Ashtabula, Kenton and Newark, Ohio New Castle, Pennsylvania

New TDA brake shoes save up to 40 lbs. per axle

• Lightweight, pressed steel construction to give you more payload plus long wear and safety. Exclusive ¾" TDA "Econoliner" brake liners held rigidly by 12 deep set rivets per block —*not bolts*. Liners are thickest at center where greatest wear occurs—taper down at ends. Result—longer wear, greater stopping ability. New cam roller mountings never seize or brinell. Light nylon camshaft bearings wear up to 4 times as long!





NEW BUCKEYE 315 HELPS PUT CONTRACTOR 100 DAYS AHEAD OF SCHEDULE ON CORAL GABLES JOB

SET RECORD DIGGING

Thru solid coral rock on Florida sewer jobs

"Oolite" is the technical name for the coral rock upon which many of the cities of southern Florida are built. It is tough, hard material—difficult to dig and unusable as backfill without crushing. But it has been successfully handled by Buckeye ditchers for over 25 years! . . . In the photo at top: A Buckeye 315 has averaged 1,700 ft. of trench, 24" wide and from 4' to 6' deep, every day—working on busy city streets in Coral Gables, Fla. The phenomenal performance of this machine has enabled the contractor, Morris Prosser, Inc., to gain over 100 days on his original estimated schedule with every expectation of finishing the job in *less than half* the time allowed. Because the action of a Buckeye ditcher breaks the coral into fine pieces, it is possible to use material as backfill without crushing—a considerable saving for the contractor . . . Another example of Buckeye's ability to cut costs by faster, more efficient performance.

No. 555

GAR WOOD INDUSTRIES, INC.
WAYNE, MICHIGAN



MODEL 51 IN MIAMI also cuts through "Oolite" in center of city when working on new 20 mile cut for the $27 million sewage program.

MARCH, 1955 • VOLUME 37 • NUMBER 3

HENRY T. PEREZ, Editor

CONSTRUCTION METHODS AND EQUIPMENT

Joint Ventures Are Here to Stay

THE PHILOSOPHY of joint-venture contracting has come in for some harsh words from one of the country's most eminent contractors.

In addressing The Moles (see p 173), Carl B. Jansen, president of Dravo Corporation, said: "Joint venturing is rapidly becoming a 'way of life' for our industry, and I seriously question both the validity of purpose and the ultimate consequences. It is becoming a habit, this endeavor to acquire partners for each new venture. As one Hollywood child explained to another: 'I have four daddies by my first momma and three mommas by my fourth daddy.' I wonder at the ease of shuffling of business partners in a business that is supposed to be in dead earnest.

"Do the public and the customer draw the proper conclusion in assuming, as many now do, that most of these combinations are to reduce competition? As joint venturing increases in popularity among contractors, are we not committing a form of slow suicide by emasculating the major asset of our industry — our rugged individualism and much vaunted competitive spirit?"

Well, there would seem to be a lot of truth in Jansen's words. The current project directory of one large construction company, for instance, shows that it is engaged in 23 joint ventures involving a total of 27 other firms, some of which appear as co-venturers on as many as 6 or 7 of the jobs.

This does not mean, however, that rugged individualism and the competitive spirit have necessarily been stifled. Indeed, as Jansen himself points out, joint ventures have merit in certain cases, namely: "the pooling of financial and manpower resources to permit bidding on and undertaking a construction project well beyond the capacity of a single contractor; and for the performance of certain military or defense projects of major size, where an individual contractor should not be expected to place his entire facilities or organization—or possibly even a substantial portion thereof—at the complete disposal of the government."

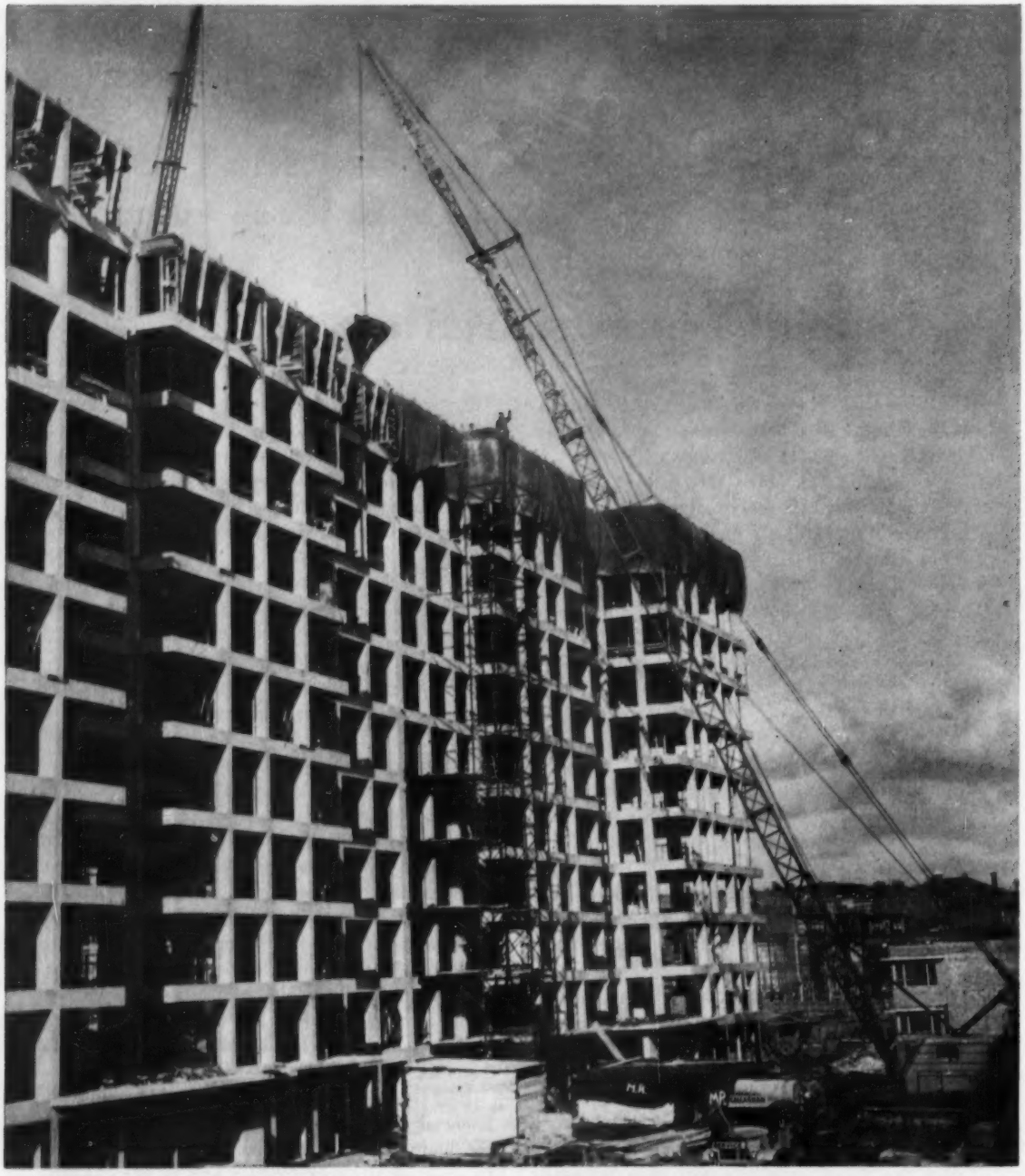
It was this basic thought—that contractors might temporarily combine to undertake projects beyond the scope of any one of them—that spawned the joint venture. Rather than decrease competition, such combinations tend to increase it by allowing smaller construction companies to bid against far bigger ones.

And even where large firms enter into joint ventures, they may well be building up increased competition among themselves for subsequent work, when they might want to "go it alone": the knowledge and experience gained on a project where the individual skills of various construction outfits are pooled can increase the ability of each participant to undertake jobs more varied or more complex than he had originally been able to.

This collective pooling of contracting skills is one of the prime advantages of joint ventures. It can often eliminate the need for subletting various phases of the job. And in so doing, it makes it unnecessary to allow for a subcontractor's expected profit, and can result in a lower bid. Pooled knowledge and ability has other obvious advantages, too: the best collective thinking of the co-venturers can result in more accurate bid estimating, in more efficient job planning, and in better prosecution of the work in the field.

It is true that joint venturing, by spreading the financial risk among all members of the combine, can limit the size of the risk individually assumed by a participating construction firm on any one job. But this is not to say that contractors have grown soft or have lost their rugged individualism. Rather, in most instances, it just indicates ordinary prudence.

Joint ventures are not cure-alls for contracting problems, of course. They are not substitutes for construction know-how, common sense, or sound business principles. Neither are they cartels for restraint of competition. Used properly, joint ventures offer many advantages for the average contractor. They are here to stay.



CRANES STRADDLE narrow building to pour half of eleventh floor. With 170-ft booms, two P&H 955 ALC'S can reach any part of building. Placing and finishing of 180-yd pour is completed by end of day. Tarp envelope seals in heat during cold weather.

Concrete Building Frames Rise Fast

By ALBERT C. SMITH, Associate Editor

PRODUCTION-LINE FABRICATING, erecting, and stripping of wood forms for reinforced concrete frames is speeding the construction of a big housing project in Newark, N. J. Eight apartment buildings are rising fast, as well-trained crews handle the latest type of forms.

The job is really organized. In fact, every man has a set of preplanned operations to perform each day. As one carpenter said, "It can get monotonous, but you sure learn your job."

Top efficency is gained by breaking up the work for several crews, each with its own foreman. One crew assembles only column



BUNDLE OF COLUMN FORMS is swung up from lower floor by crane. All form sections are marked to keep them in the same place on each floor. Beam and deck forms are stripped the next day.



COLUMN FORM is plumbed up and braced, as another is put together on horses. Forms consist of plastic-coated plywood backed with 3x4 walers on the long sides. All ties are external.



WORKMEN ASSEMBLE column form by connecting opposite snap-tie eyelets with C-bars, and tightening tie holders on the outside of the walers. Form is then placed upright on floor in wood templet. Note clean-out slot at base of column form.



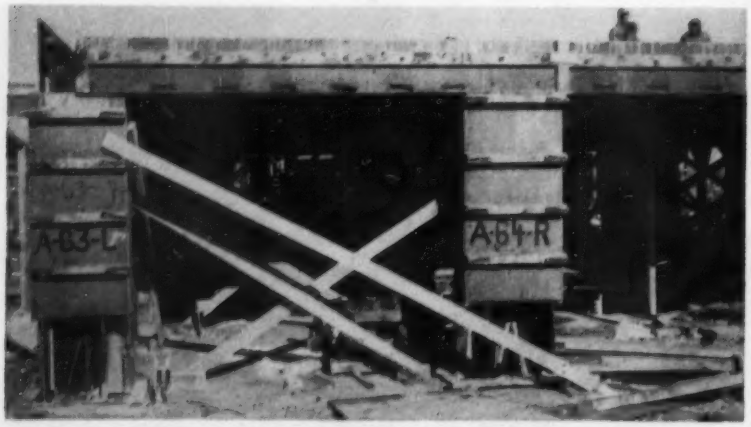
C-BAR DEVICE developed by contractor speeds form handling by leaving ties set in walers. Staples keep holders in place.

forms, a second crew erects beam forms, and a third places deck. Other crews fabricate the forms, erect stair forms, strip, and place concrete. Repetition makes each craftsman a specialist.

Form design also has a lot to do with the speed of the job. Forms are made lightweight, simple, and easy to erect and strip. One set of forms serves an entire 13-story frame 280 ft long and 60 ft wide. It is reused 13 times, once for each story, and it requires practically no alterations. Each form section is marked for a specific part of the frame, and it holds that position on every floor.

Clever form design is a specialty of the contractor, Terminal Construction Corp. of Wood Ridge, N. J. Long experience in reinforced-concrete frame construction has shown Terminal that form handling is one of the keys to maintaining fast construction schedules.

On the Newark housing job, the contractor's construction schedule calls for one pour every day. To do this, four buildings are included in an 8-day pouring cycle. A half-floor of one building is poured each day, completing one floor on all



INTERIOR BEAM FORMS extend across building on column forms. Three-sided beam form is simple to erect because it is handled as a unit. To aid stripping, notched keys, similar to one shown above column A-64-R, are removed first.



RADIAL-ARM SAW in job mill cuts stock lumber into required sizes and stores them in bins near roller conveyors.



DOUBLE DRILL PRESS mounted over roller conveyor drills two 5/8-in. holes at a time in column form. Hand-held power drills take longer and produce much more operator fatigue.



STEEL SLEDS are loaded with fabricated form sections for towing to the buildings. Loading directly on sleds cuts handling and eliminates trucks. Forms are reused 13 times.

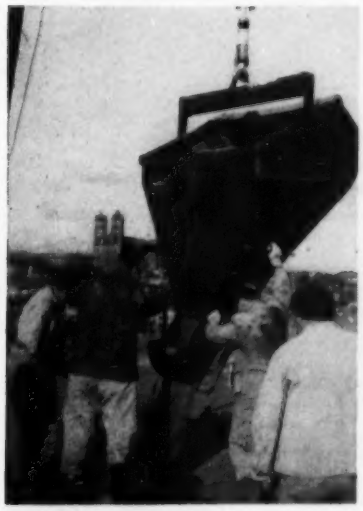
four buildings at the end of the cycle. In summer, forms can be stripped earlier, and the cycle is reduced to only 6 days. Brick work follows close behind. (CM&E, Feb. '54, p. 60)

Column Forms

One of the chief reasons for the fast pouring cycle is the speed at which the forms can be erected and stripped. The column form, for instance, is assembled and set in place on the concrete floor in a matter of minutes. It is a simple form. Only the two long sides have walers, and these are 3x4's permanently attached to 5/8-in. plastic-coated plywood. The two narrow sides of the form are simple sheets of plastic-coated plywood that fit into the side forms. Most of the columns are 14x18 in.

The big time-saving feature of the column forms is the tie device developed by Terminal. Short Richmond snap ties modified with an eyelet on one end are set permanently into the walers with the head end set in a tie holder. Snap ties in opposite walers are connected by C-bars that hook into the eyelets. This type of tie eliminates a lot of handling, because the ties do not have to be fed in during assembly and pulled out for stripping. Only the C-bar is removed. Holders are stapled to the walers, but enough room is allowed for tightening.

To strip the form, a carpenter hits the holders with his hammer, loosening the ties just enough to free the C-bars. When the C-bars are removed, the two long sides of the form pull off first and the two short sides after. Bunches of C-



CONCRETE is spread over deck as it pours out of Insley 2-yd bucket. Workmen use handle to control rate and direction of flow.



SPACE HEATERS fed by propane gas tanks warm inside of tarp envelope during and after pour. Contractor works all winter.



CEILINGS ARE RUBBED with electric-powered Giraffe made by Concrete Grinding Corp. Machine eliminates need for scaffolds.

bars are nailed to one of the form sides to keep them at hand for the next erection.

To assemble a column form, one long side is laid flat over two horses, and the two plywood sheets for the short sides are placed on top and braced temporarily. The other long side is then set on top, the C-bars are connected to the ties, and the hairpins are tightened.

The assembled form is then set in place inside a wood templet nailed to the concrete floor. Wood braces keep the form plumb. A clean-out slot on one of the long sides of the form is kept open until just before pouring, to remove any debris. To reduce the size of the column above the sixth floor, spacer blocks are inserted on the long sides.

Beam Forms

Beam forms are simple to erect because they are handled as one unit. They consist of two plywood sides and a bottom held together with external tie rods and wood stiffeners. Beam forms are 18 in. wide and 15 in. deep and run transversely across the building on column forms. To aid stripping, abutting beam forms are separated by a 3-in.-wide notched key on each side. After column forms are stripped, the key is pulled out, leaving enough room to pry the beam form loose.

Forms for the 4- to 6-in. deck are ⅝-in. plastic-coated plywood supported on 3x4 ribs. The ribs run between shelf strips on the sides of the beam forms. To speed stripping, ribs are not nailed to the shelf strips. Instead, they are cut slightly off square at the ends and wedged in tight by hammering. Stripping is just as simple.

The final operation is placing T-jacks. These 4x4 units are erected under beam forms and raised to the proper height with wedges. After all forms are stripped, many of the T-jacks are placed back under the beams and kept there until the concrete attains its required strength.

Most of the stripping is done in the first few days after the pour. Columns are taken down on the two days right after the pour and lifted in bundles to the next floor. On the third and fourth days, beam and slab forms are stripped, carried up, and erected right after the columns. The remaining days of the 8-day cycle are used for placing steel reinforcing, and mechanical and electrical conduits and inserts.

When the new cycle starts, a half-floor has to be ready for pouring. Two P&H 955ALC cranes move in on each side and position themselves to swing 2-yd buckets. With 170-ft booms, they can reach any part of the building. No buggying is required. Columns are filled first and vibrated. Beams and deck follow. Pours average 180 yd and are completed in one day. Placing is done in the morning and finishing in the afternoon.

Despite the cold weather, Terminal is working through the winter. When the temperature drops below freezing, the forms are enveloped in tarps and heated by propane gas units. Concrete is also heated to 50 deg at the ready-mix plant.

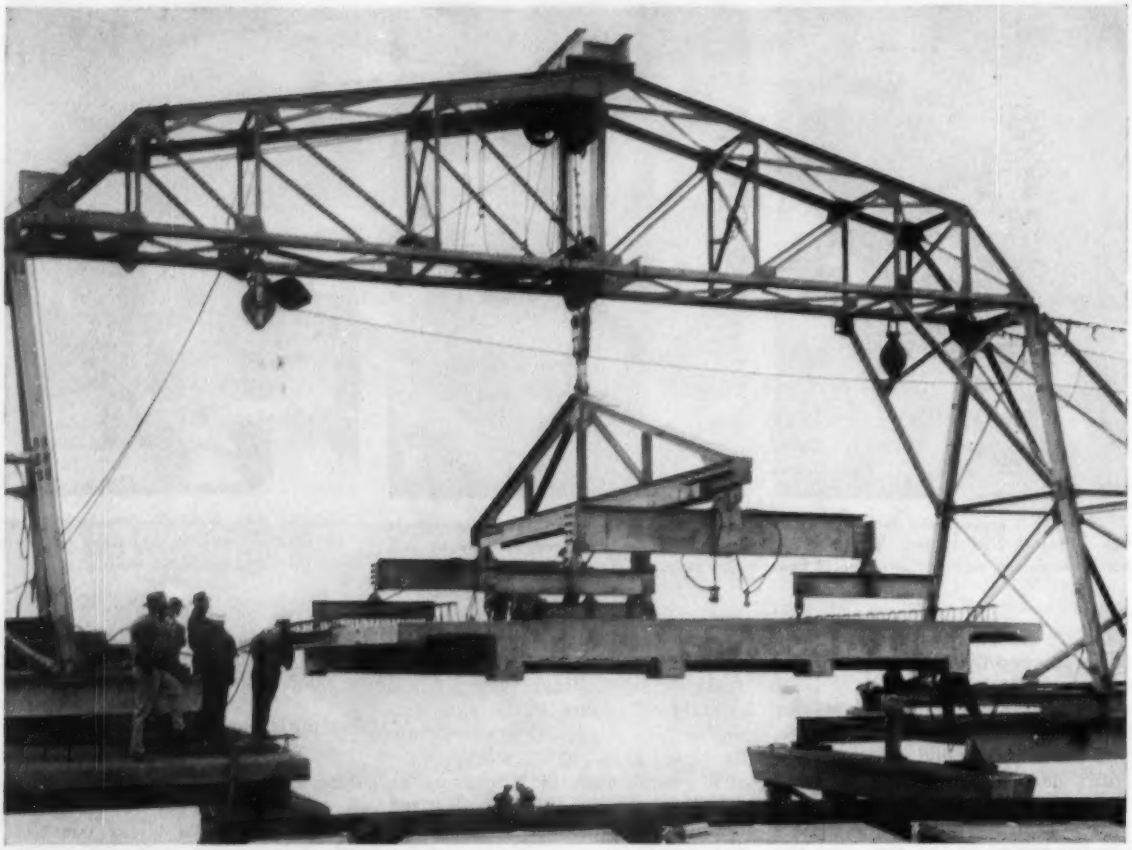
Prefabrication

Prefabrication of forms is also done by production-line methods. A mill set up near the center of the project turns out a complete set of forms for each of the eight buildings. Stock lumber moves in at one end and finished forms come out the other.

To speed fabrication, both plywood and lumber are sawed into several required sizes and stored close to a line of roller conveyors. Workmen quickly place sheets of plywood on the conveyor, nail 3x4 walers in the proper places, and send the units along the conveyor.

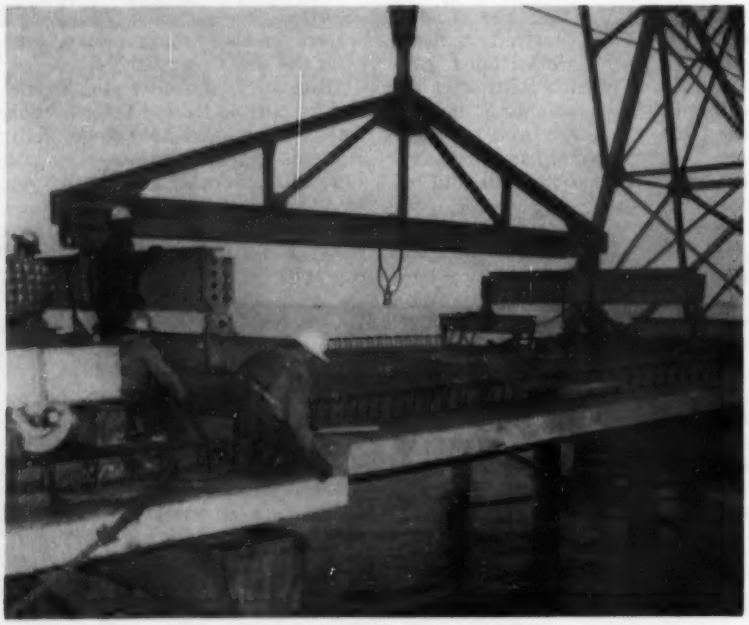
Ordinarily, the next step would call for cutting tie-rod holes in each waler with a hand-held power drill. But this operation can be slow and fatiguing. Terminal does the job in a matter of minutes with a job-developed double-drill press. Two ⅝-in. drills, each powered through a belt by an electric motor, quickly cut two holes at once in a waler. By positioning the panel on the conveyor and the drills on their mounts, holes can be cut anywhere in the form. At the far end of the conveyor, units are loaded on steel sleds for towing to the buildings. Sled handling eliminates trucks.

R. N. Dinallo is president, V. P. Carnecchia is secretary-treasurer and A. M. Dinallo is general superintendent for Terminal Construction Corp. A. Sadori is carpenter superintendent.



TRAVELER LIFTS 65-ton precast slab out of barge-mounted form, rotates it 90 deg, and sets it in place on concrete pile caps. Lifting hooks suspended from hoisting frame screw into eight Superior coil anchors cast into the slab. Placing takes 1 hr.

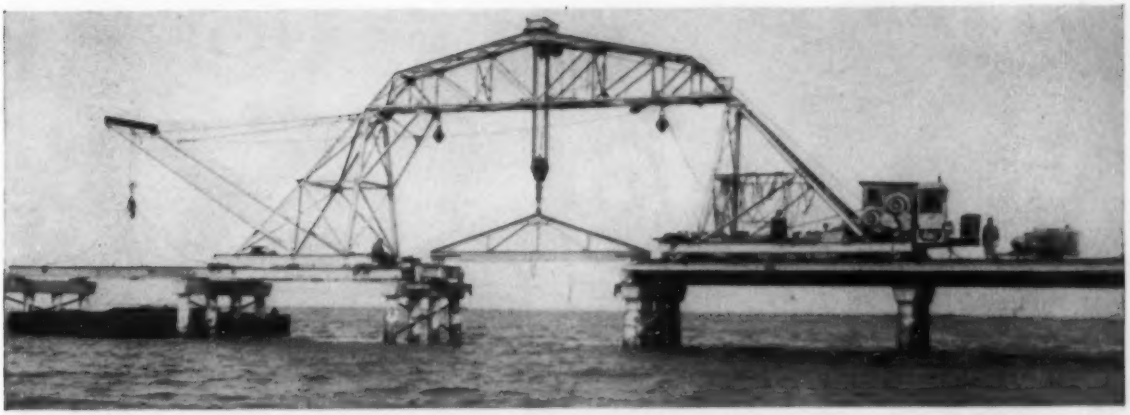
Traveler Sets Slabs Precast on Barges



ROADWAY SLABS for an Alabama bridge are being precast ashore on barges, towed to the site in the forms, and erected with a special traveler. The method not only eliminates the problems of setting up a casting yard and rehandling slabs on barges, but also does away with the need for a costly derrick boat.

Nearly 350 slabs 29 ft wide, 34 ft long, and weighing 65 tons each are precast in sheet steel forms mounted on barges. The 10-gage forms are supplied by Irvington Form and Tank Co. of New York. The job requires about six barges, each carrying three slabs. Ready-mix concrete is poured in the forms at a dockside plant 27 mi from the

TRAVELER LOWERS 34-ft-long precast slab on to 23-ft concrete cap poured over 4-pile bents. Note dowels for pouring curbs.



TRAVELER STRADDLES OPENING between two bents waiting for barge to pull under with precast slabs. After each slab is placed, gallows frame on front of traveler sets track beams between next two bents. Traveler winches itself ahead, as rear rides on slab.



TRAVELER CREW WAITS for barge to move between pile bents, where they will lift off first slab. Just before hoist takes load, air pressure is forced through large hoses under the soffits to break the bond and pop the slabs loose from the steel forms.

bridge. Six days after pouring, barges are nosed between pile bents at the bridge, the traveler picks off the slabs, and sets them in place. The forms are cleaned on the way back to the casting plant so that they are ready for pouring when they arrive.

The ingenious methods were developed by Blount Brothers Construction Co. of Montgomery, Ala., and Kansas City Bridge Co of Kansas City, Mo., joint-venture contractors on the $3,500,000 Dauphin Island Bridge across Mississippi Sound. Awarded by the Alabama Highway Department, the contract calls for the construction of a 4.4-mi structure across shallow, open water. It includes 2.2 mi of steel and concrete bridge and a 210-ft lift span. Remainder of the structure is bulkhead fill and roadways.

Designed for H-15-44 AASHO loading, the slabs carry a 24-ft roadway, two 6-in. curbs, and two 2-ft sidewalks. Slabs are set on 23-ft 3-in. concrete caps 3 ft wide at the top, 2 ft at the bottom, and 2 ft deep. Caps are poured on to 4-pile bents of 10-in. 42-lb steel bearing piles reinforced with structural steel sway braces above the water line. Most of the steel pilings which are footed in sand are 90 ft long or more although some are as short as 81 ft.

Casting

At the casting site, ready-mix trucks of the Radcliff Gravel Company haul only 75 ft from the batching bins to dockside with a 4- to 6-min interval for mixing. A Lorain 820 crane handles a 1-yd Insley laydown concrete bucket between the trucks and the barges. Slabs are screeded and belted and cured with Hunt Process clear curing compound. Each barge takes about 86 yd of concrete.

Concrete-mix design calls for the following proportions per cu yd:

Cement—541 lb
Flyash—135 lb
Water—38.9 gal
Sand—1,094 lb
Gravel—1,728 lb
Entrained Air—3%

Locally produced flyash used as a cement replacement produces cost savings and also provides a sea-water resistant concrete.

Steel reinforcing for the precast roadway slabs is tied into cages in special false forms on the bank of the Mobile river and the entire cage for one slab is lifted from the false form and lowered into place on the barges by a Bucyrus-Erie 38B crane.

At the bridge site a slab-placing traveler, designed specially for the project and equipped with a Skagit Model G-70 Hoist, travels on its



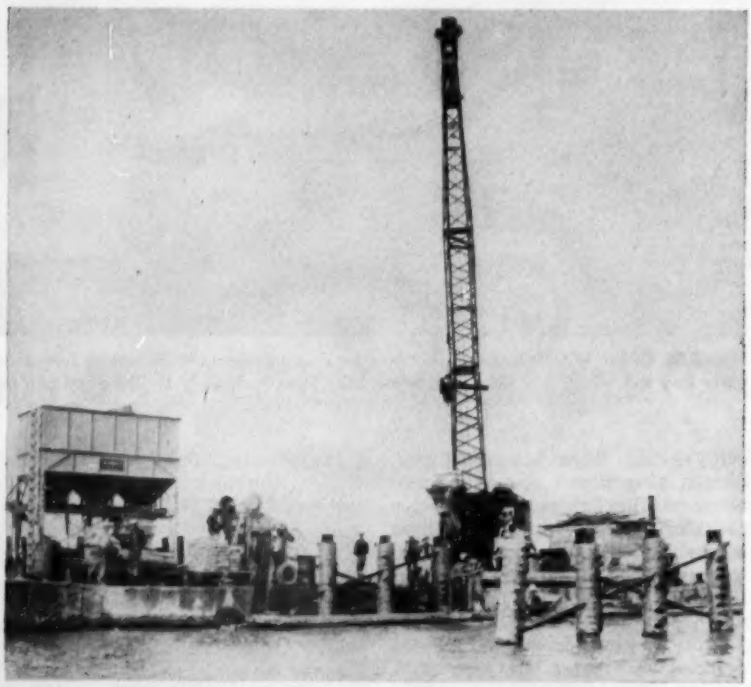
BARGES MOUNTING STEEL FORMS for three slabs are moored at dock close to Blaw-Knox batch plant. Ready-mix trucks dump concrete into Insley bucket, which is swung over forms by Lorain crane. Concrete is screeded, belted, and then cured with Hunt Process.

own tracks as the bridge grows. It reaches down between the pile bents and connects its lifting beams to eight lifting eyes screwed into coil anchors cast into the slab. These accessories are supplied by Superior Concrete Accessories, Inc.

Just before the hoist takes the load, air pressure is applied through large - diameter hoses placed under the soffits to break the bond and pop the slabs loose from the forms. The hoist lifts the slab above the level of the roadway, it is revolved through 90 deg and lowered into place on the concrete caps. In this way it is possible to get the barges between the bents which are 34 ft apart.

First one end slab, then the other, and finally the center slab are lifted from the barge so that the barge remains as nearly level as possible during the lifting operation. Average time for lifting and setting a slab in place is 50-55 min, including drilling holes and placing dowel pins into the caps on the fixed end of each slab. After each slab is placed, the traveler must be moved ahead. To do this, a gallows frame on the forward end places track beams between the next two bents and the traveler winches itself ahead. The stern rides on the precast slab.

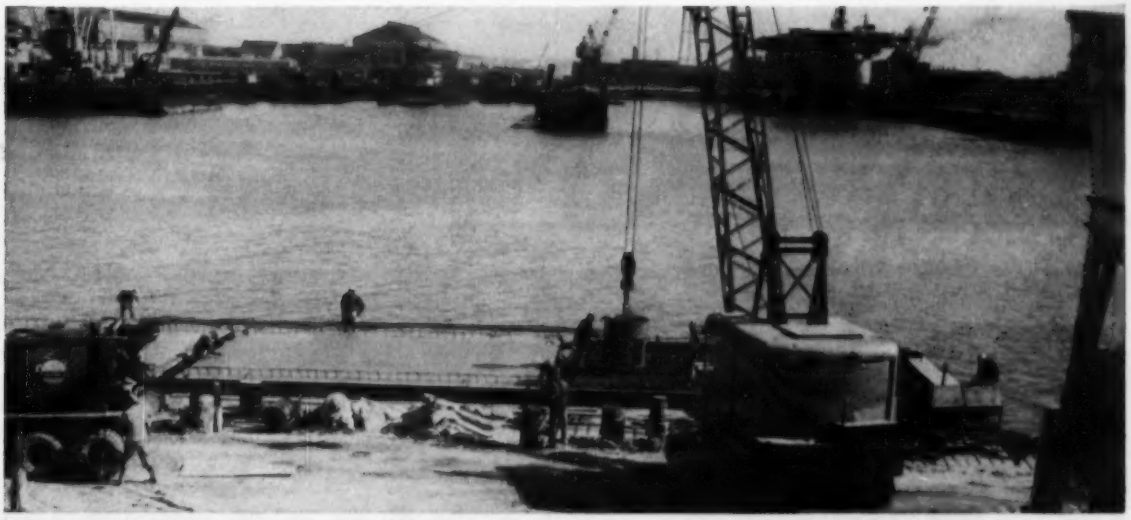
Another feature of the job is the piling encasement. A job-developed air- and water-jetting device permits seating each concrete encasement 2 ft below the ground line which varies from 1 to 16 ft below the water line. Development of the device made it more efficient and economical to use the 20-in. dia circular encasements than the standard 16-in.-square encasements.



BATCHING AND MIXING PLANT mounted on barge supplies concrete for encasing piles. Winslow Binabatch and 28S mixer are main equipment. Jetting device helps sink tubes.

Each paper form or Sonotube is fitted with a wooden bottom shaped to fit the H-shaped piling. The form is then set in the jetting cage which extends 2 ft below the bottom of the tube and which has six jets. The ground line is sounded and the jetting cage, Sonotube and reinforcing spiral slipped over the upper end of the piling.

Encasement concrete pouring begins with the bottom of the Sonotube just above the water line, and the weight of additional concrete carries the device to the bottom, as pouring continues. Consequently, all concrete is placed in the dry. A mandrel trips the jetting cage as it reaches the ground line, and



END SLAB ON BARGE is poured, as other units are finished. Prefabricated reinforcing cages are placed in the forms at another dock. Forms are cleaned and prepared for the next pour during the 27-mi return trip from the bridge site. Job requires 6 tugs.



CONCRETE IS POURED into 20-in.-dia Sonotube to encase the H-piles. Forms keep fresh concrete from becoming exposed to sea water. Clamps hold tubes in place.

when the full encasement has been poured, it is topped off 1 ft above the water line, and the jetting cage is recovered.

Presence of the sway braces makes it more efficient to pour the remaining part of the encasing concrete, which reaches to within 1 ft of the top of the piling, as a second operation since the Sonotubes must be slit and notched to fit these braces. The paper tubes are easily cut with an electric circular handsaw, fitted over the sway bracing, and then clamped with 1¼-in. iron ratchet-type column clamps.

Another advantage of the paper forms is that they eliminate external curing and keep the fresh concrete from becoming exposed to sea water. The Dauphin Island Bridge contractors believe they have successfully solved the problems that heretofore prevented use of such forms for underwater construction, despite their obvious advantage over square encasing forms.

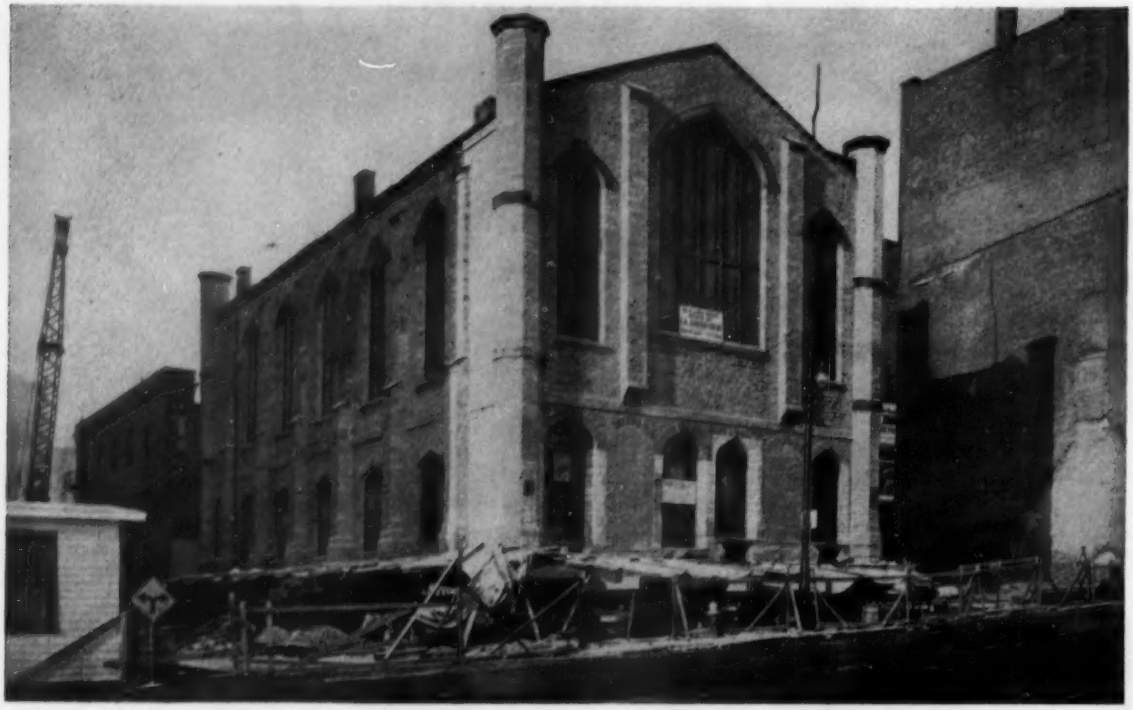
Concrete for the piling encasements and the caps is poured from a concrete plant working at the site.

Communication is maintained through the use of a Motorola radio network connecting tugs, major operations, office and superintendent. Portable sets are available for isolated operations.

The lift span over the Intracoastal Waterways erected by American Bridge Div. of U. S. Steel Corp., will have a horizontal clearance of 200 ft. The lift towers rest on 9 ft 3-in.x28-ft steel caissons filled with concrete, and conventional bridge piers. Each caisson has nine 42 lb 10-in. bearing piles and each pier footing has 36 such steel bearing piles.

The bridge was designed by the Alabama Highway Department, John W. Chambers, chief bridge design engineer. Construction is under the control of Fred A. Robison in charge of the State's staff at the site.

Frank W. Currey is general superintendent for Blount Brothers-Kansas City Bridge, Russell Thompson is field superintendent, W. D. Tryon is project engineer, Bruce Johnson is officer engineer, F. W. Dushane is office manager, W. W. Morton is master mechanic, S. S. Smith is carpenter superintendent and H. H. Naylor is superintendent of slab casting.



Records for relocating old structures are challenged with this...

105-Year-Old Church on the Move



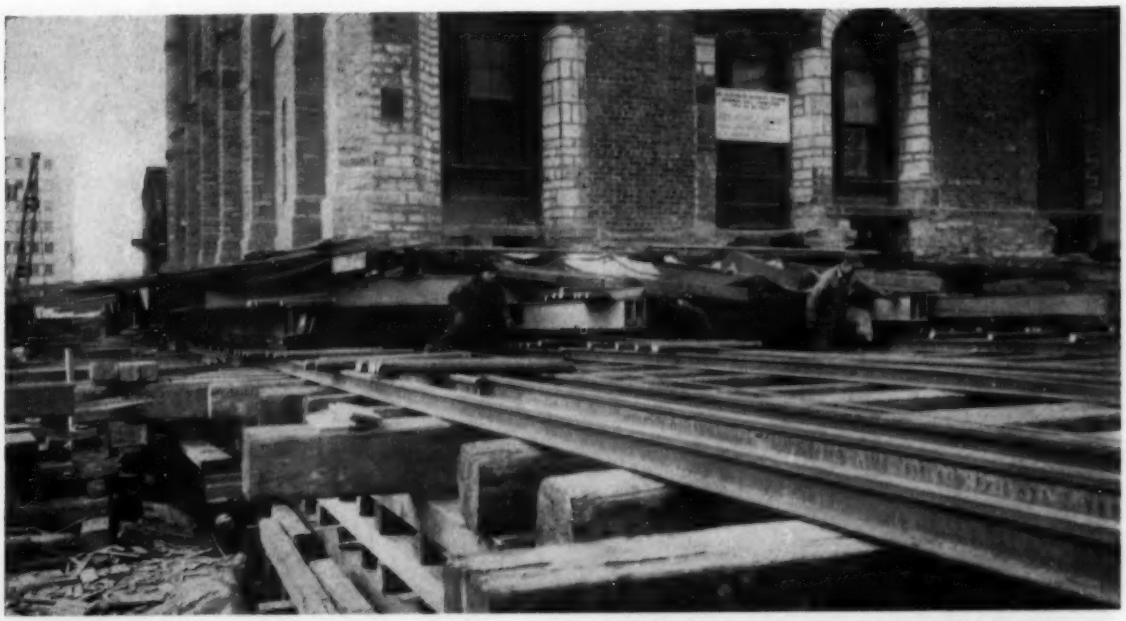
PATH OF TRAVEL, although short, was difficult because of a catacomb of old sewers, water lines and public utility tunnels running under a busy main street of Detroit.

MOVING DETROIT'S 105-yr-old Mariners' Church 880 ft due east and 17 ft north from its original location is believed to hold the record for movement of old structures. The move is part of a waterfront clean-up and Civic Center program.

The building 50x100x60 ft weighs 6,000,000 lb and is constructed of field stone walls 3 ft 6 in. thick.

Gluck Construction and Building Repair Company won the general contract for the job with a bid of $261,000, and C. A. Johnson and Son, Inc. was low bidder on moving the structure with $130,000.

Biggest obstacle of the move was preparing the path of travel. Woodward avenue, one of Detroit's main arteries, had a catacomb of old sewers, water lines and public utility tunnels running under the street at the point of the projected move. Contractor Johnson also had to move the structure across the basements of several other demolished buildings. At the church site Woodward avenue drops at a rate of approximately 3 ft from the west to the east side adding additional complications.



STEEL SCREW JACKS of 35-ton capacity were used to raise the 6,000,000-lb structure 7 ft 9 in. Steel railroad rails and 3x4-in. rollers under steel saddles were installed beneath 6 triple web I-beams for runs. Diesel trucks provided the moving power.

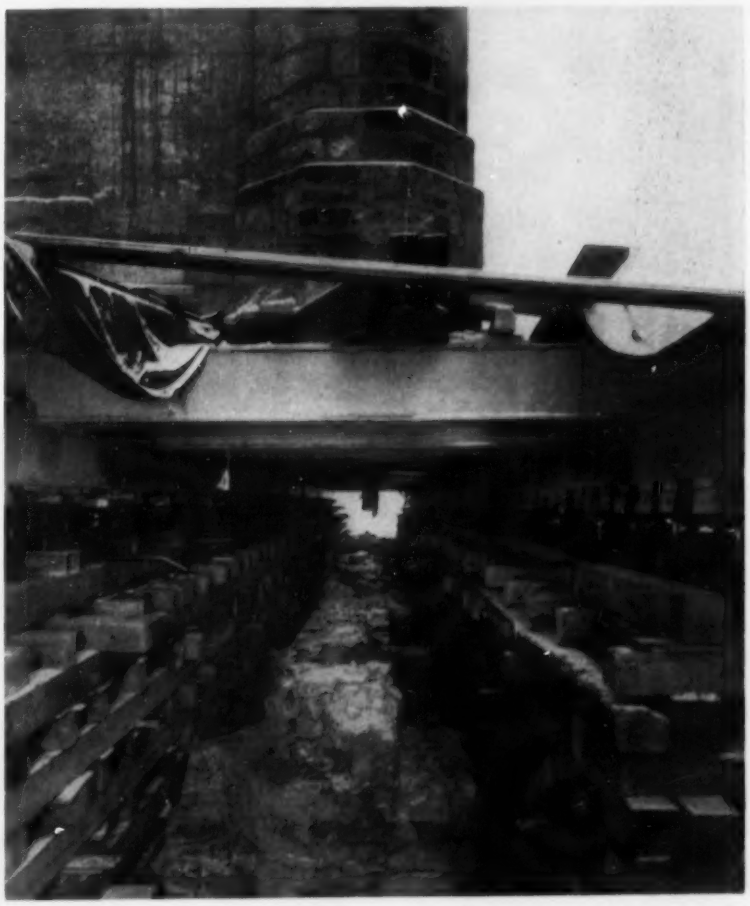
Initial preparations for the move were begun in November when the area around the church was excavated so the supporting grill or grid of 200 tons of steel beams could be installed beneath the building. These beams were grouted in to allow even bearing against the rough stones.

It required a month to raise the structure 7 ft 9 in. before lateral motion could begin. Steel screw jacks of 35-ton capacity, manually operated by a crew of 35 were used to raise the church. Level readings were checked by 4 surveying instruments, and the structure was not permitted to vary more than 1.16 in. during the raising operation.

In January, after the church had completed its vertical ascent, steel railroad rails and 3x4-in. solid steel rollers under steel saddles were installed beneath the 6 triple web I-beams, called runs. These runs provide the main carriage for the moving job.

Motive power for moving the structure is being provided by two diesel trucks equipped with winches, with 1,000 ft of cable traveling through 22 pulleys.

The permanent site for the church contains 11- to 13-ft foundation pads and foundation walls 3 to 5 ft thick, 5 to 13 ft high. Reinforcing steel amounted to 32 tons, and 990 cu yd of concrete were used.



AREA AROUND CHURCH was first excavated so the supporting grill of 200 tons of steel beams could be installed beneath the building. The building was 50x100 ft.



VITAL PIPELINE to take fuel to Alaskan military installations is built at top speed to beat short Arctic construction season. Most of 620-mi line will remain permanently above ground, only 150 mi of it will be buried in trench.

Push Pipeline Across Alaska

TOUGH ARCTIC CONDITIONS have been taken in stride by crews laying 620 mi of 8-in. pipeline between Haines and Fairbanks, Alaska. Battling such things as permafrost, muskeg, swamps, mountains and insects, just two spreads welded the entire line in less than six months.

The $29 million pipeline, which will supply aviation and diesel fuel to military installations in Alaska's interior, is being built under U. S. Corps of Engineers supervision. General contractor is a joint venture: Williams Brothers Co., Tulsa; McLaughlin Inc., Great Falls, Mont.; and Marvell Construction Co., Ltd., Vancouver. Williams handled the actual pipelining, shown on these pages.



MATERIALS ARE FREIGHTED on steel-pipe sledges drawn by Caterpillar D6 tractors in areas inaccessible to trucks. Here, skid timbers are being distributed along right-of-way.



PIPE IS DELIVERED by pole trailer truck in areas where ground is more cooperative, but truck still has to be assisted by crawler-tractor hooked on ahead. Sideboom rig speeds the unloading.



ENDS ARE BUFFED in preparation for welding into the line. This HT4 tractor shovel is fitted with stub boom and tongs for handling pipe, box for tool storage, and Onan generator to run buffer.



SECTION IS BENT by shoe and sideboom on D6 Cat. Clearing of right-of-way, 50 ft wide, was done by Oaks Construction Co., Anchorage, on subcontract, in temperatures as low as −60.

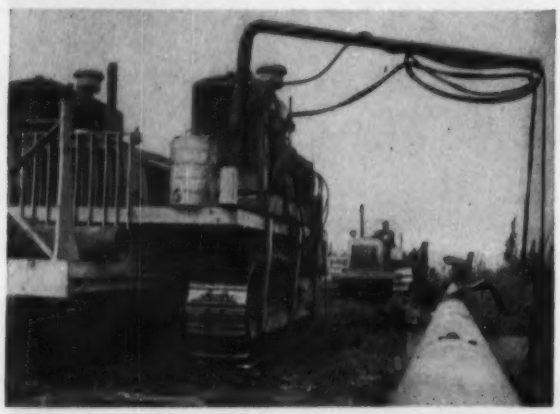
(More photos on next page)



PIPE IS ALIGNED and welded by highballing spread that averages 2 mi per day and has hit as much as 4. Well-laden D6 tractor that follows three leapfrogging sideboom rigs carries electric-welding and gas-cutting equipment. Joints will later be X-rayed.



TRENCH IS DUG through muskeg and underlying permafrost by Cleveland ditcher. To dig this "un-digable" material, Williams had to put smaller heavy-duty wheel on machine, add two extra buckets and alternate 5- and 6-in. teeth. Teeth are replaced each shift.



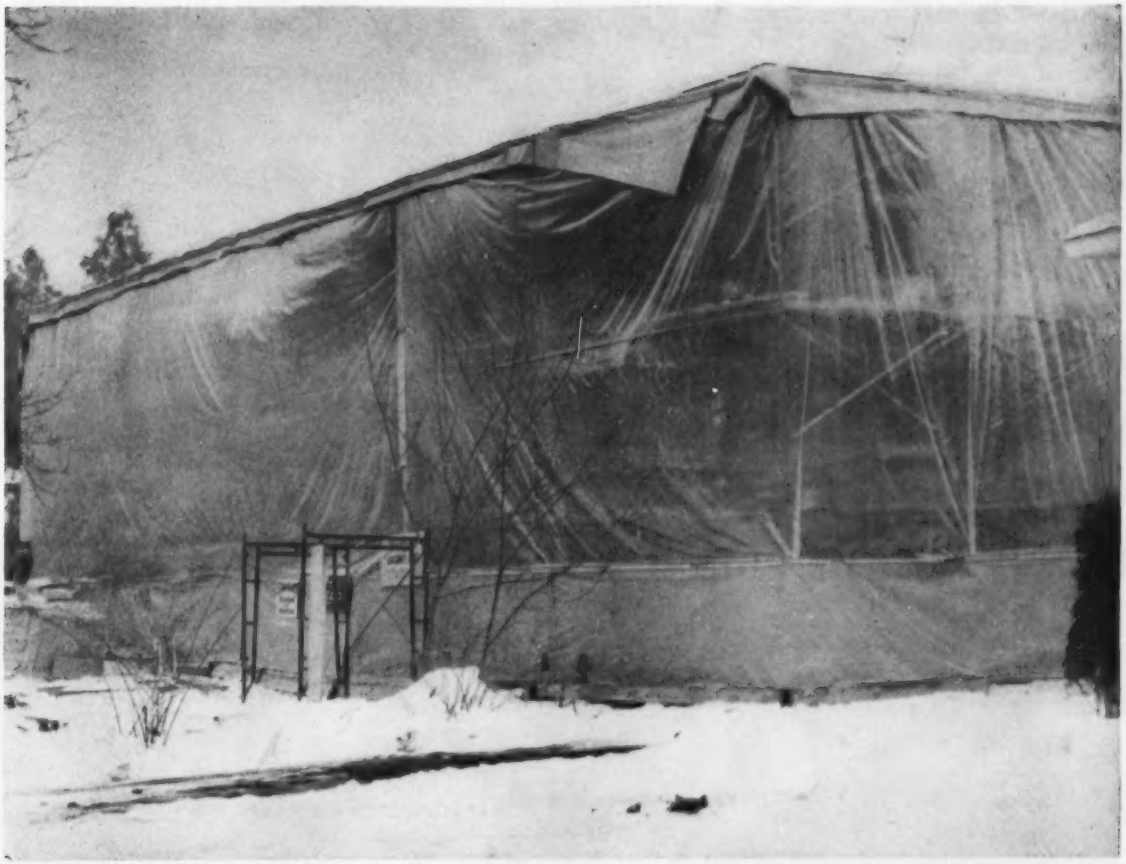
JOINTS ARE WELDED by two Lincoln 300-amp machines mounted astride a Cat D6 tractor. While this and one other spread handles normal pipeline operations, specialty crews tackle river crossings.



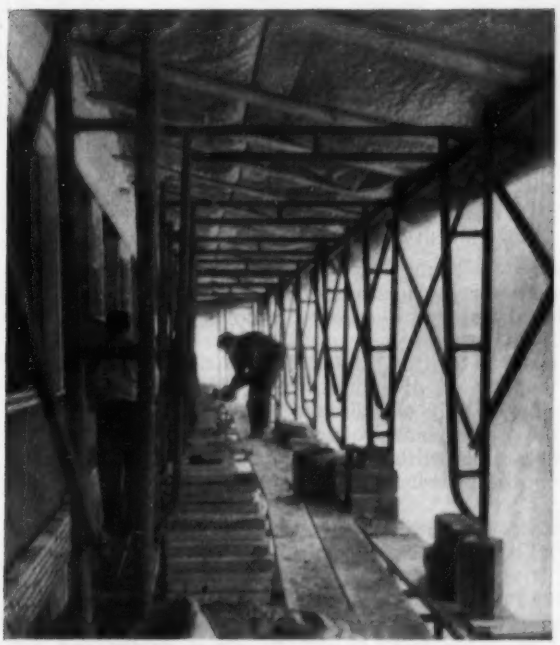
RIVER CLAMP IS ADDED to submerged pipeline to help weight it down and keep it from floating up in mucky muskeg. Material turns to mush when muskeg removal exposes frozen ground beneath.



← LINE IS BACKFILLED by two-tractor team: One acts as a "stomper" to hold pipeline down with its bulldozer blade, while the second pushes muck into the ditch. This stretch, part of 150 mi of buried section of 620-mi pipeline, was toughest met.



No cold weather layoffs on this job as masons lay brick within this . . .

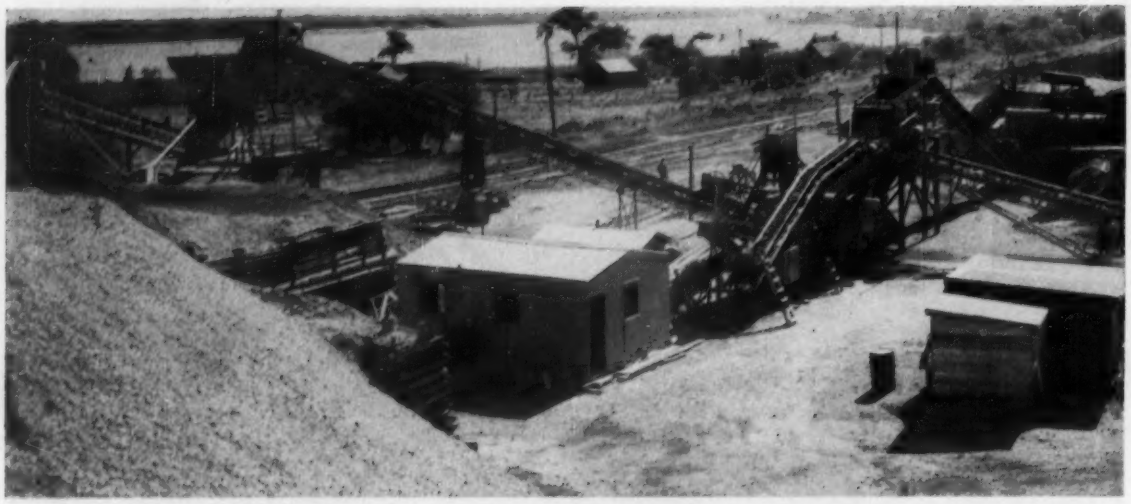


INSIDE LOOKING OUT of Pliofilm tent which enables masons to lay brick in 13-deg temperatures.

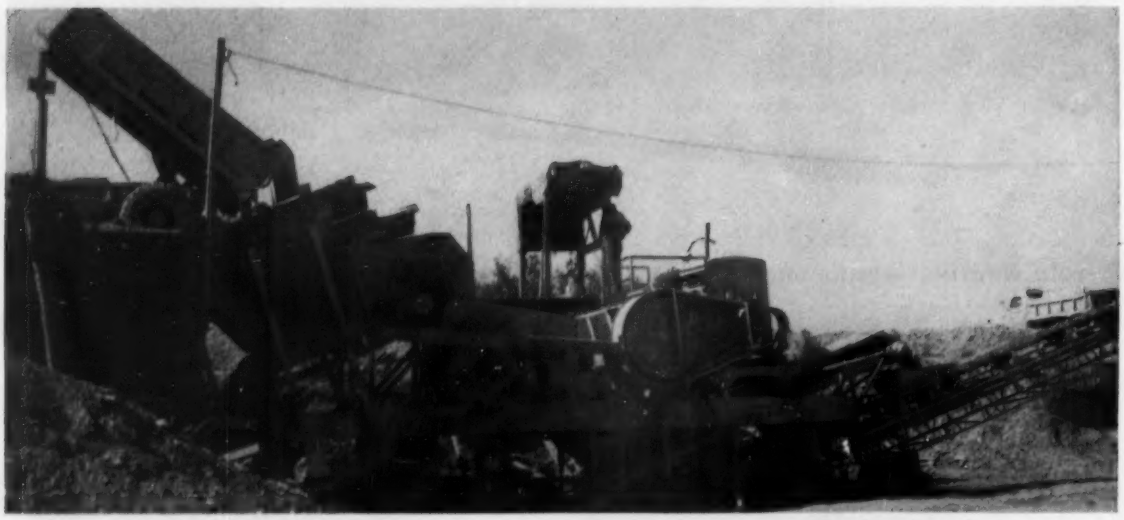
Pliofilm Tent Covering Two-Story Building

WARMTH AND LIGHT A-PLENTY during 13-deg temperatures was what Stan Llewellyn, Spokane masonry contractor, obtained for his men when he hit upon the idea of covering the two-story $70,000 apartment house on which they were working with a Pliofilm tent which not only kept the cold air out and held in the hot air generated by the oil heaters, but also admitted the light necessary for carrying on the job.

The Pliofilm to cover the front of the building and about half of each end cost Llewellyn only $85. That was, he figured, about what he would have lost in pay if his crews had been laid off for 3 hr. He got the idea for a plastic transparent covering after experimenting with tarpaulins which kept the heat in, but admitted no light. Rain or shine, cold or hot, Llewellyn figures he's done something about the weather—so far as the masonry business goes.



Gravel Plant Hits Big Production...



...When Fines By-pass Primary Crusher

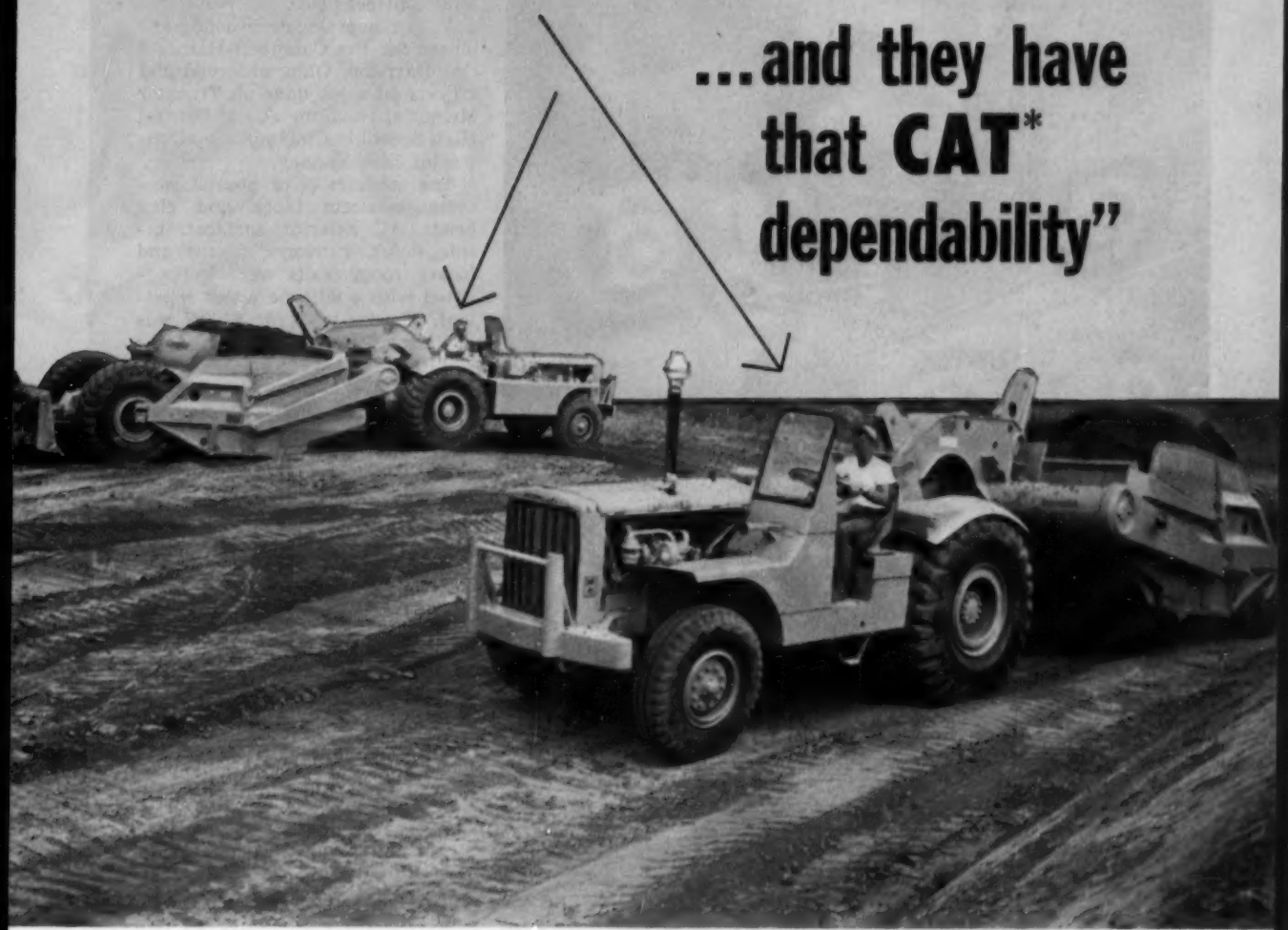
HIGH PRODUCTION of 2½-in. minus material was obtained steadily with a team of two Pioneer crushing plants at the Gagetown Army Base, Gagetown, New Brunswick, by the contractor, Dexter Construction Co., of Lancaster, N.B. Under a subcontract from Atlas Constructors, Dexter produced material for all the roads at Gagetown, Canada's biggest army base, at the rate of 5,000 tons daily.

First in line was Pioneer's new Model 150 PRS diesel-powered primary crusher, equipped with 3x10-ft apron feeder, a 20x36-in. overhead eccentric jaw crusher and a 4x6-ft two-deck heavy-duty vibrating screen ahead of the jaw. One section of the gravel supply pit included boulders measuring up to 18 in. This material was processed through the 150 PRS primary. The screen passes material 2½ in. and under, which is delivered directly to the stockpile by way of conveyors through the second plant in the team of crushers, along with material coming from the primary crusher.

The second plant is a Pioneer 46VE diesel-electric bottom-deck feed duplex-type. It receives the material from the 150 PRS, crushes further any rock exceeding 2½ in., and discharges to loading bin and stockpile. In addition, the 46 VE is fed by a second conveyor leading from a surge hopper kept supplied by trucks bringing materials from another section of the gravel pit where rock does not occur more than 8 in. in size. Material 2½-in. minus is screened out at once and discharged to the loading bin. Larger rock is crushed in the duplex before stockpiling, along with the larger rock received on the conveyor from the primary crusher.

Screening out and passing fines around the crushing units pay off with greatly increased production. The new Pioneer 150 PRS is a portable that can be towed behind a truck. Its diesel engine and delivery conveyor are mounted on the plant.

"They move plenty of dirt ...and they have that CAT* dependability"



A county road south of Bloomington, Kansas, had to be straightened. Fill for the job—some 70,000 yards of clay and loam—were to come from changing Kill Creek's channel . . . a big assignment that called for fast-stepping heavy-duty machines. G. W. Christolear, of Heide & Christolear Construction Co., Smith Center, Kansas, says, "We looked the earthmoving equipment field over, watched all makes of rubber-tired machines, talked to the owners, and settled on Caterpillar DW15s. The fact that they move plenty of dirt and have that Cat dependability convinced us."

The DW15s on this job haul heaped loads in their No. 15 Scrapers, making an 800-yard round trip in just over four minutes. They go ten hours a day on only 35 gallons of fuel.

These 150-HP four-wheeled workhorses are designed and built for tough, fast, economical work. They offer ten forward speeds to 24 m.p.h.—to 31.3 m.p.h. with optional gears. They perform especially well in narrow, confined areas. And they work smoothly with a complete line of matched units—with scrapers, and with bottom dump and side dump wagons.

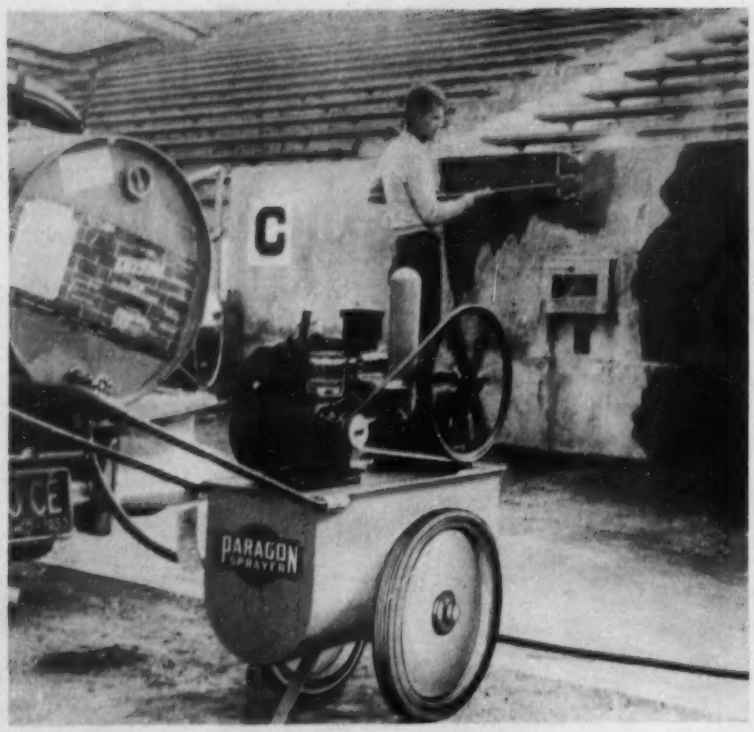
But only a real demonstration can show you the DW15's advantages. Call your Caterpillar Dealer today. And remember, he's always handy with competent service and genuine factory parts—parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Both Cat and Caterpillar are registered trademarks—®

NAME THE DATE... YOUR DEALER WILL DEMONSTRATE



Stadium Waterproofing . . .



. . . Goes Quick and Easy

WATERPROOFING PROTECTION for 66,825 sq ft of concrete and masonry surfaces against weathering effects, efflorescence and staining was applied recently to a school stadium at less than 7¢ per sq ft, total contract price.

A. P. Stoepel, waterproofing engineer for the Campbell-Hausfeld Co., Harrison, Ohio, observed and reports on a job done on Trechter Memorial Stadium at the Central High School in Cincinnati, by Contractor Jack Kenney.

The stadium is of poured concrete, concrete block and clay brick. All exterior surfaces, inside floors, runways, ramps and locker room walls were impregnated with a silicone water repellent. The contract for $4,387 was let 1 yr after completion of the stadium to prevent moisture absorption and subsequent freezing of concrete, to minimize maintenance and to lengthen the life of the structure.

Using a portable power sprayer and double hose lines, Contractor Kenney flowed the waterproofing compound on the specified surfaces in two weeks' elapsed time—in spite of interruptions, as the stadium was used for football practice and games.

The handy Paragon Sprayer he used is a simple piston pump, driven by a Briggs & Stratton engine, commonly used on farms and estates for general-purpose spraying. Pump and engine are mounted on top of a liquid supply tank on wheels.

Penetration

Capacity of the pump is on the order of 1½ gal of mist per min, and pressure is adjustable up to 150 psi. By using a low-pressure setting of 10 to 15 psi, the compound was permitted to penetrate well into the masonry and mortar joints without losses of material in mists and overspray. A three-nozzle applicator incorporates a control for quick changes from mist to stream spraying and spreads over a wide area for fast coverage.

Kenney averaged 110 sq ft of coverage per gal on the Trechter Stadium contract, using Crystal silicone-type water repellent. Inspection of the finished job showed that the repellent penetrated 1/16 in. into the mortar and ⅛ in. into the concrete.

Total cost of the waterproofing is under 1% of the construction cost of the stadium.

(Advertisement)



This special bucket has vertical bars welded in place to prevent "skulls," large slag deposits which build up in ladles, from clogging the bucket. Note the use of Stoody 21 on the bars and the inside of the bucket. Monthly reapplications of hard-facing keep it in shape.

GETTING BETTER SERVICE FROM ALL TYPES OF BUCKETS

Down in Birmingham, Alabama, there is a company that really knows all about buckets—the Birmingham Slag Company. This organization is chiefly concerned with the reclamation of blast furnace slag which is crushed and treated for the production of an aggregate used primarily for road building. There are few materials more abrasive than this slag; ordinary buckets just can't take it without the protection afforded by extremely wear resistant hard-facing. This is true of all types of buckets used by Birmingham Slag Company... *special shovel buckets handling the "skulls," clam shells and scoop lifts.*

The pictures here pretty well tell the story. The company uses Stoody 21 liberally as shown in the illustrations to protect teeth, lips, sides and runners. As wear occurs, reapplications of Stoody 21 are made, as necessary, to keep the equipment in top operating condition.

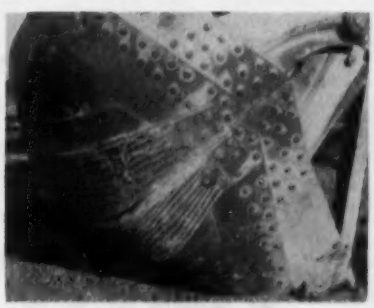
Get complete details on the use of Stoody 21 and other Stoody alloys; you'll find them in the Stoody Guidebook, available from your dealer (consult the yellow pages of your telephone book)—or write to the company.



This latch plate also gets a Stoody 21 treatment to prevent wear.



These Stoody 21 beads across the bucket here resist severe abrasion as it is dragged across the rubble in the slag pit.



The lips on this clam shell are kept in good shape with beads of Stoody 21 for a tight seal.



The scoop lifts handling crushed aggregate lead a rough life; Stoody 21 keeps the lips, sides and bottom in condition. Occasional beads of this material are added as wear occurs.

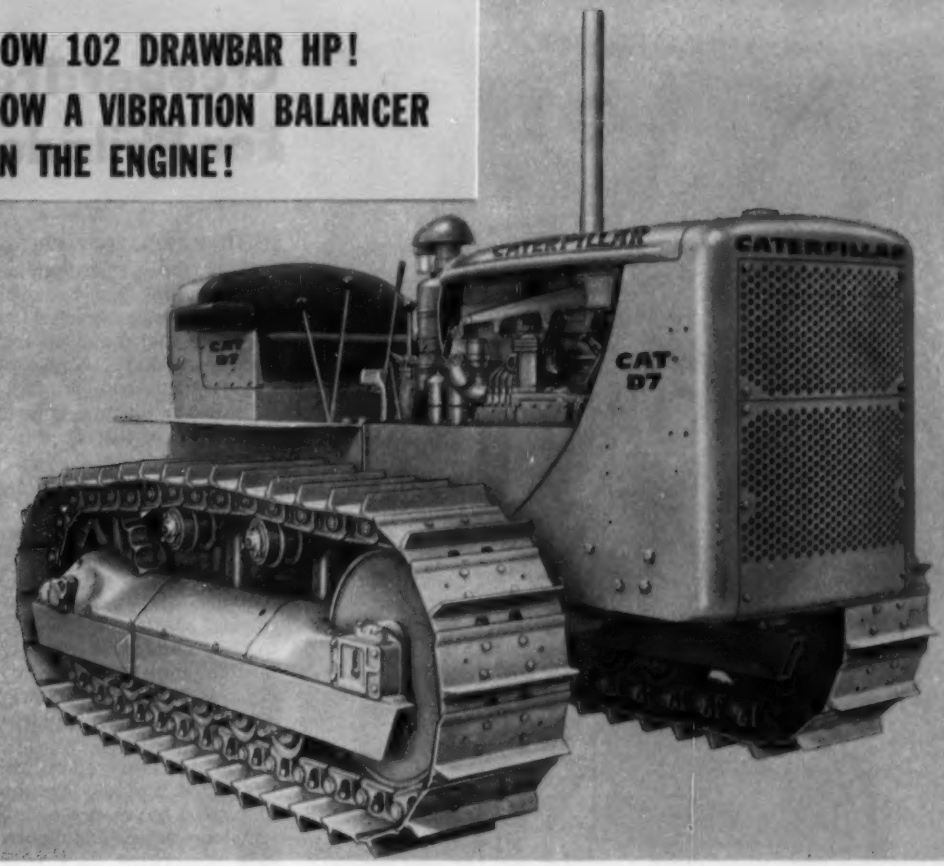
STOODY COMPANY 11972 East Slauson Avenue, Whittier, California

CATERPILLAR ANNOUNCES THE NEW D7

SERIES C

MORE POWER, SMOOTHER PERFORMANCE

NOW 102 DRAWBAR HP!
NOW A VIBRATION BALANCER ON THE ENGINE!



Here's the new CAT* Diesel D7 Tractor... latest example of Caterpillar Leadership in Action!

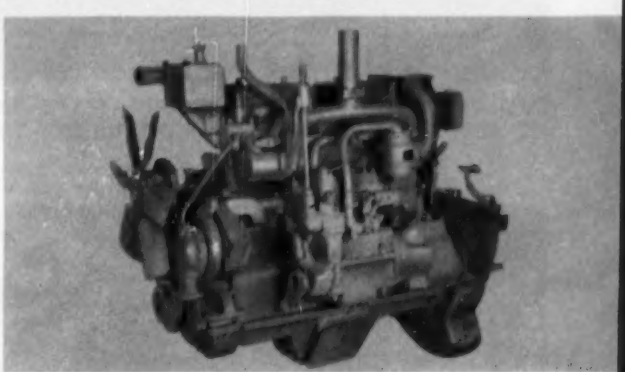
DRAWBAR HP INCREASED to 102, engine HP to 128 (at 1200 r.p.m.).

VIBRATION BALANCER on the powerful 4-cylinder engine now gives you all the smoothness of 6-cylinder performance.

DRAWBAR PULL now 28,700 pounds maximum.

NEW STARTING ENGINE has more power for surer, faster starts in all weather, and simple single-lever control for easier operation.

NEW "WATER QUENCH" PROCESS for hardening track shoes almost doubles shoe life.



New 128-HP Engine features improved fuel injection system, flanged center main bearing to take crankshaft thrust, many other advances.

The new D7 Series C is ready now to give you more profitable production than ever before. Call your Caterpillar Dealer today for a demonstration!

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR*

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THE NEW D7...MORE POWER, SMOOTHER PERFORMANCE

CATERPILLAR TRACTOR CO., Peoria, Illinois
I would like additional information on the new D7 Series C

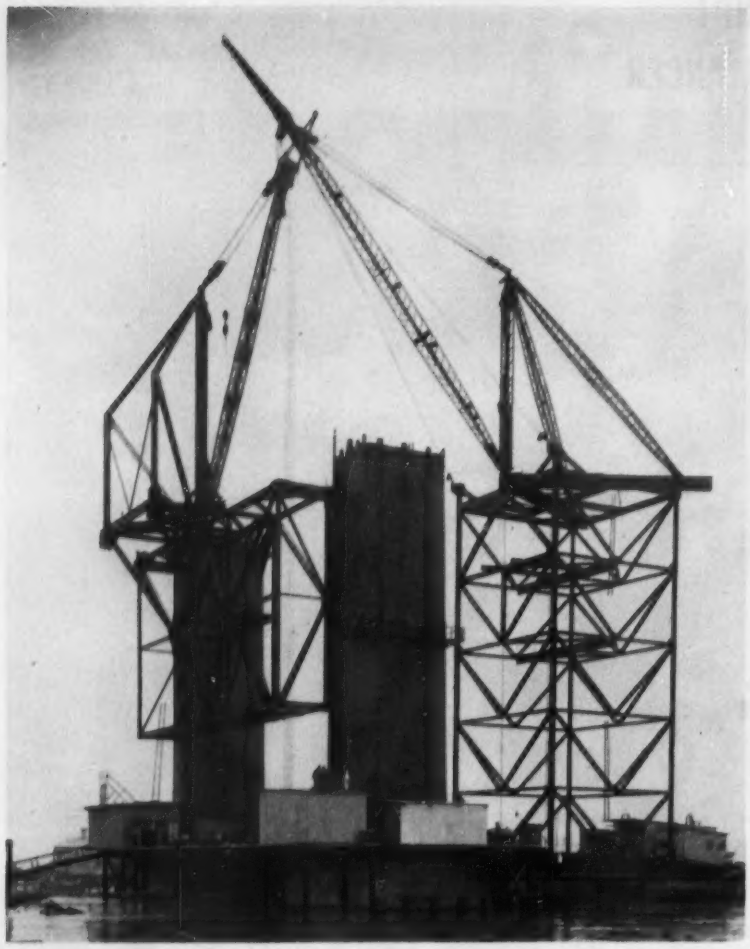
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Creeper Traveler For Philadelphia

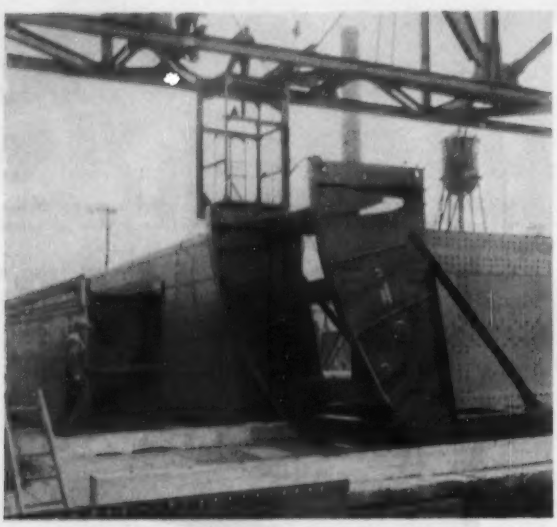


FLOATING DERRICK with tip 240 ft above water erects first three tiers of bridge tower and then assembles creeper traveler on outside face. Creeper erects rest of 370-ft tower.

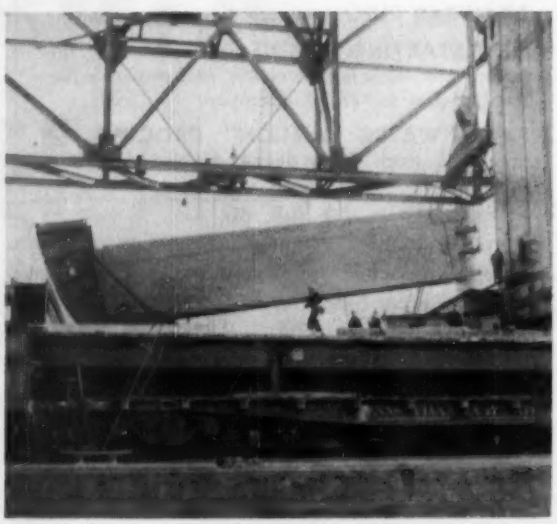
HIGH STEEL TOWERS for supporting the suspension cables on Philadelphia's new Delaware River Bridge are being erected by creeper travelers that move up the face of the tower shafts. Stiffleg derricks mounted on top of the creeper frames are placing ten steel tiers one on top of the other to a height of 370 ft.

Bethlehem Steel Company, which is fabricating and erecting the superstructure, selected creeper travelers rather than Chicago booms because of the wide space between shafts. At the base of the towers, shafts are 87 ft apart, face to face. They measure 16x22 at the bottom and 12x14 at the top. In cross-section, tiers consist of 12 cells surrounding a large center well.

The erection procedure is well organized. Tier sections shaped like elongated boxes, are brought in on car floats which are moored alongside a working dock surrounding the base of the tower. The derrick on the traveler picks a section off the float and places it flat on the dock so that its base end rests on a steel cradle. Lifting hooks are removed from the middle of the section and connected to a special lift-



1 WELDED STEEL CRADLE 12x12 ft in cross-section and 12½ ft long receives base end of tier section for upending operation.



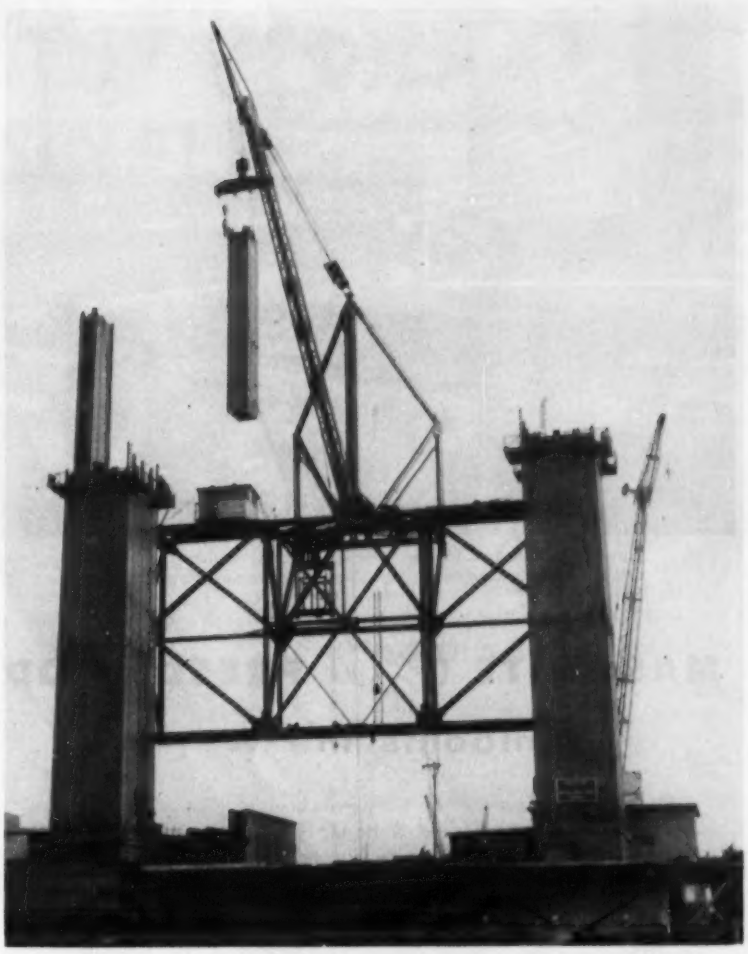
2 LONG TIER SECTION slowly upends, as derrick raises top end with special lifting beam. Note car float moored to dock.

Erects Towers Suspension Span

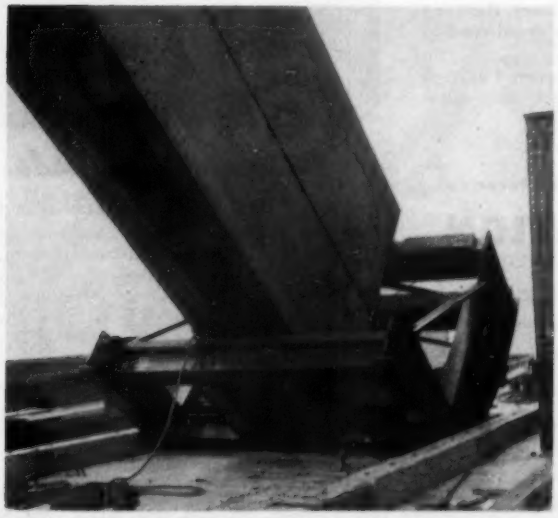
ing bracket at the top end. Then the derrick slowly upends the tier section on the cradle, and continues lifting it up to the top of the tower. The 6-ton steel cradle, which protects the milled surfaces of the tier during upending, is balanced to permit easy handling.

With a 95-ft boom and a 20-ft jib, the derrick can lift a 65-ton section at a 75-ft radius. When the derrick places a tier, it is bolted temporarily until weight is added on top to make the milled surfaces fit tightly. Then it is riveted.

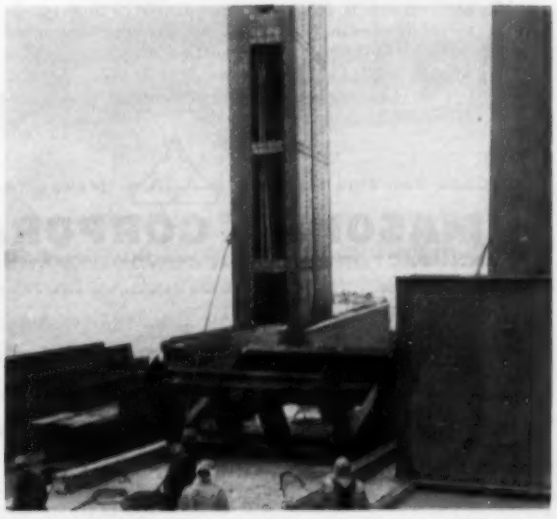
After each set of tiers is erected, track beams are attached to their faces and the creeper is jumped. Cat-head beams, placed on top of each tier by the derrick, lift the creeper up the tracks and hold it in place until it is locked by bearing plungers that are inserted into precut slots in the track beams. Hoisting lines reeved through the cathead beams are connected to an American 2-drum hoist powered by a Waukesha engine through a Twin-Disc torque converter. All controls are air-powered. A similar unit with three drums and side swingers operates the creeper derrick. A 100-hp electric hoist operates a personnel elevator that rides



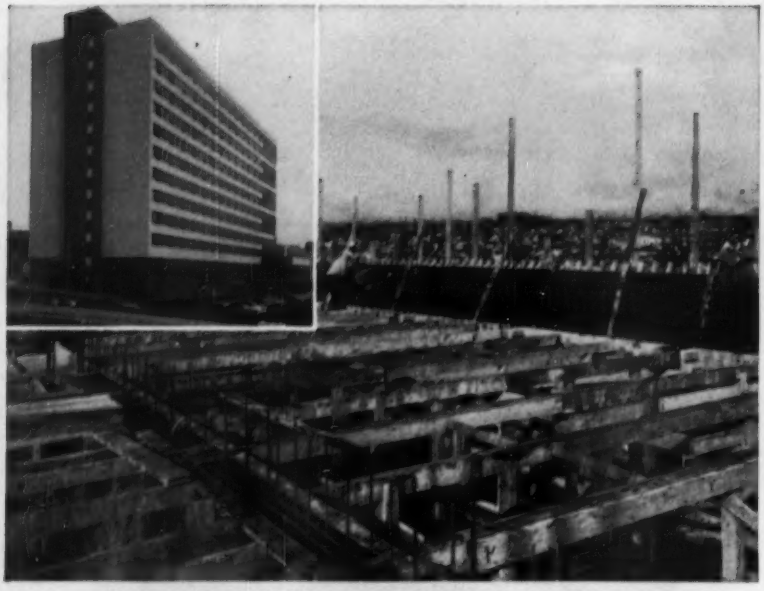
CREEPER TRAVELER that rides up track beams on tower faces swings heavy tier section in place. With 95-ft boom and 20-ft extension, it can lift 65-ton load at 75-ft radius.



3 **HEAVY TIMBER GUIDES** keep cradle in line during upending. Wood blocking inside cradle protects milled surfaces of tier



4 **DERRICK** continues lifting tier as cradle rotates back to balance position. Slight pull sets cradle to receive next section.



Men's residence hall, University of Washington, Seattle. Architects—Young, Richardson, Carleton and Detlie. General Contractor—Strand & Sons.

MASONITE *Concrete Form* **PRESDWOOD**

Smooths the Way!

"The smoothest surface we have ever been able to produce," says Ray W. Strand, of Strand & Sons, Seattle, about architectural concrete formed with Masonite Concrete Form Presdwood.

Not only the walls, but the ceiling slabs, columns and beams were formed with this dense, grainless hardboard. In some cases, Mr. Strand reports, panels were used a dozen times. The 4′ x 8′ and 4′ x 12′ sizes were easy to work and handle, created fewer fins.

Cut Costs 3 Ways!

1. Screen side to concrete—for painted or unpainted surfaces. Tiny projections left in the concrete cut hand-rubbing costs up to 50%.
2. Smooth side to concrete—for painted or unpainted surfaces. Rubbing virtually eliminated. No knots, grain or blemishes in Presdwood to mar the finished concrete surface.
3. Screen side to concrete—for painted surfaces. The textured surface left in the concrete forms an excellent bond for paint. Only minimum rubbing required.

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Please send me a sample of Concrete Form Presdwood and your free booklet.

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"Masonite" signifies that Masonite Corporation is the source of the product

CREEPER TRAVELER ... Continued



AIR-POWERED CONTROLS simplify operation of American 3-drum hoist and side swingers. Powered by Waukesha engine through Twin-Disc torque converter, hoist operates creeper.

in cable guides between the dock and the creeper.

The creeper traveler did not begin erecting any steel, however, until the fourth tier. All of the early work was done by a huge floating tower derrick and a crawler crane. The derrick erected the first three tiers, and then the crane assembled the creeper on the face of the third tier. The tower rig mounted a stiffleg derrick with a 100-ft boom and 20-ft extension.

When the bridge is completed, it will have a main span of 2,000 ft and will carry seven lanes of traffic. Owned by the Delaware River Port Authority, the $90,000,000 structure will have a main span of 2,000 ft suspended from 23-in. cables strung over the towers.

Steelwork is being handled by Bethlehem's Eastern District under G. P. Bullard, manager of erection, and M. A. Matlock, his assistant, in direct charge. At the site, V. Asseto is resident engineer and Oscar Brunn is superintendent.

Famous Last Words...

(By L. H. Scott, Turner Construction Co.)



"THAT SALAMANDER WON'T TIP!"

LATEST NEWS ON LORAINS!



LORAIN 26

HEAVY DUTY 3/4-YD.

15 tons as a Crane

- ★ Greater Crane lifting and working capacities.
- ★ 19 ft. Shovel Boom for greater reaches.
- ★ 19 ft. Hoe Boom for deeper digging.
- ★ Much Greater Weight—over 47,000 lbs. as a shovel.
- ★ "E-Z" Action Operating Levers.
- ★ Hydraulic Power Crawler Controls.
- ★ More Power — plus non-stall, no-shock Hydraulic Coupling power take-off.
- ★ Newly-designed, sturdier, wider 2-speed Crawlers with 29" wide treads.
- ★ Sturdier strut-type Turntable Bed.

LORAIN 25

GENERAL PURPOSE 3/4-YD.

Up to 12 tons as a Crane

This general purpose 3/4-yd. machine is a real speedster, readily adaptable to all-around 3/4-yd. service. Fully convertible to 5 front ends. The crawler is 12'6" long. Now available as a crane with lifting capacities of 10 and 12 tons.

LORAIN 15

HEAVY DUTY 1/2-YD.

Up to 10 tons as a Crane

This is your best buy in the 1/2-yd. class — as great a value as the "26". Includes the new fatigue-reducing, output-increasing Lorain "E-Z" operating controls. Now available in crane capacities of 8 and 10 tons.

Here's a heavy-duty 3/4-yd. machine any way you look at it! From its newly-designed, 2-speed crawlers to its new longer booms for even greater operating ranges . . . with its greater weight and increased power . . . it's a real "workhorse" for the toughest kind of 3/4-yd. service. Check this partial list of new features and decide now to see your Thew-Lorain Distributor for the full facts.

THEW LORAIN. THE THEW SHOVEL CO., LORAIN, OHIO



TEN-TON LIMESTONE BLOCK called C stone, is transferred from derrick scow and lowered into selected spot in riprapping operation covering a clay core dike in Lake Michigan. Three-ft blanket of smaller bank-run (A stone) is placed between clay and C stone.



PINPOINT PLACING of large stone is done with guidance of transit man. Tolerances in height variations are limited to 6 in.



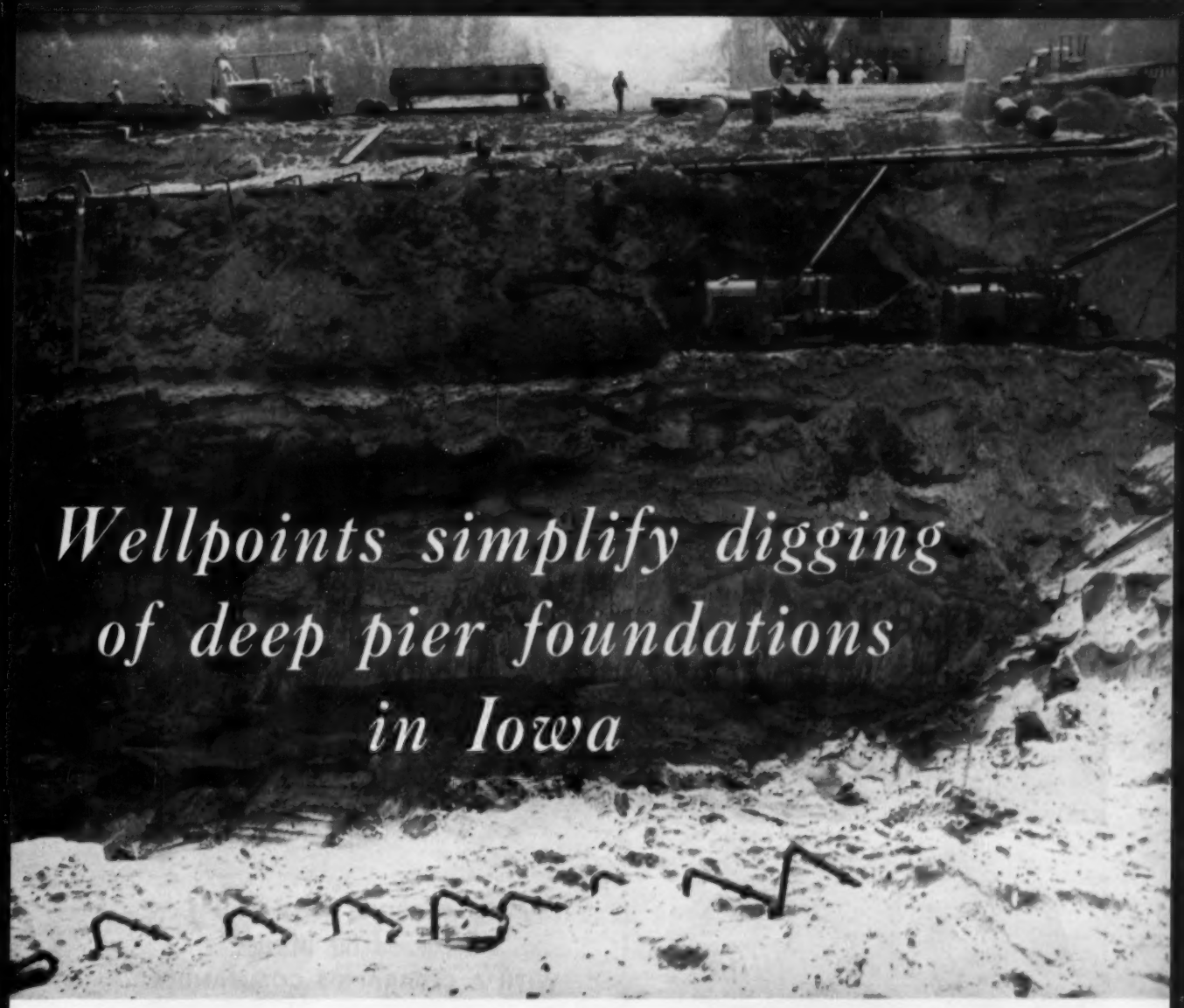
DERRICK SCOWS placing A stone on clay to check bank erosion along the 8-ft freeboard and establish base for large riprap. A stone gradations range from fines up to one ton. Derricks were equipped with clamshells and orange-peel buckets.

Clay and Stone Placed to Make A Good Dike

IN CONSTRUCTING an impervious clay core dike for the cofferdam walls of Chicago's new $85,000,000 Central Filtration plant, the contractor is attaining a high degree of permanence in the structure, while cutting costs by using near-by materials.

The cofferdam is being built to enclose a 61-acre offshore site in Lake Michigan. When unwatered (scheduled for Aug., 1955), this area will enclose installations that will treat and supply water to some 3,000,000 persons residing in the northern reaches of Chicago and suburbs.

(Continued on page 78)



Wellpoints simplify digging of deep pier foundations in Iowa

Substructure contractors: McCarthy Improvement Co., Davenport, Iowa

This is Pier #4 for the new Clinton-Illinois Bridge which will soon carry traffic over the Mississippi River. Subgrade is 25′ below normal water level. A Moretrench Wellpoint System keeps the job progressing smoothly in the dry.

No need for expensive sheeting. Banks are sloped, leaving plenty of room for quick, easy excavation and for safe pile driving operations. Thirteen additional piers are being handled in the same economical way.

Forecast for '55? There'll be *plenty* of wet jobs.

Make money on them by pumping with MORETRENCH!

Send for our catalogue—a picture-story of Moretrench wellpoint history.

MORETRENCH CORPORATION

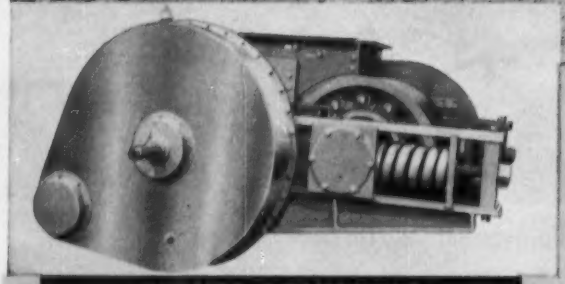
90 West St. New York 6 | 4900 S. Austin Ave. Chicago 38, Illinois | 7701 Interbay Blvd. Tampa 9, Florida | 315 W. 25th St. Houston 8, Texas | Rockaway New Jersey

Western Representative: Andrews Machinery of Washington, Inc., Seattle 4, Washington

Canadian Representative: Geo. W. CROTHERS Limited, Toronto, Ontario

12% MORE FINER-SIZED AGGREGATE .





HIGHER TONNAGES OF FINE-CRUSHED PRODUCTS

This new 30" x 25" Cedarapids Roll Crusher handles the same size feed as the 30" x 22" formerly used in the Commander, but its higher capacity makes it the best size to balance the great screening capacity of the Commander's big screen. This design ratio of crushers, screen and conveyors is the secret of the Commander's big-volume production at low cost per ton.

MORE REASONS WHY YOU'LL "Command the Market" WITH A CEDARAPIDS COMMANDER

- **Large 48" x 10' Horizontal Vibrating Screen gives the extra screening capacity necessary to balance the greater output of the new 30" x 25" Roll Crusher, and assures maximum screening efficiency.**
- **30" wide conveyors throughout the plant easily handle the increased capacity.**
- **Engineered for *minimum maintenance* with sealed bearings on all return rolls and troughing rolls, self-aligning bearings, disc clutches, sealed crusher bearings, stress-relieved crusher bases and screen box, free use of alloy steel, easy access for lubrication and service adjustments.**

GET COMPLETE DETAILS FROM YOUR CEDARAPIDS DISTRIBUTOR

ASK ABOUT THESE CEDARAPIDS PLANTS



Model G60
Bituminous Mixing Plant



Model CM
Bituminous Mixing Plant



Single Pass
Crushing and Screening Plant



Double Impeller
Impact Breaker

. . AT THE SAME COST PER TON!

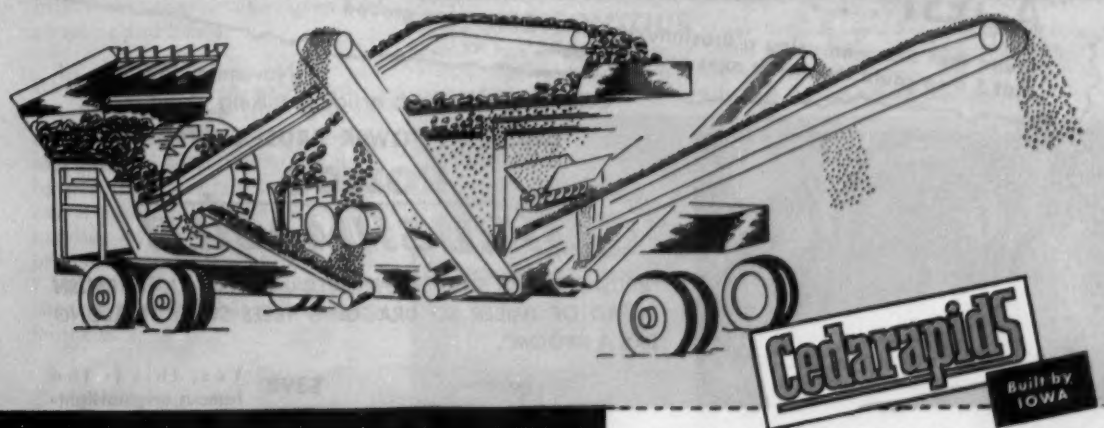
ANNOUNCING BIG NEW 30"x25" ROLL CRUSHER!



Increases CEDARAPIDS COMMANDER secondary crushing capacity by 12%

Here's the best answer to *greatly increased* output of finer sizes, or more profitable operation in pits with high percentages of fines. Now Cedarapids Commander production is *even greater* than the enormous tonnages turned out by the plant originally equipped with a 30" x 22" roll crusher. The roll crusher is the final sizing or metering point—12% more roll crusher capacity also means the jaw crusher can be opened larger for additional extra capacity, depending upon crusher feed size, *without increasing operating or maintenance costs one cent!*

bigger roll crusher—large screen—wide conveyors . . . ALL BALANCED FOR MAXIMUM PRODUCTION



IOWA
MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

IOWA MANUFACTURING COMPANY, Cedar Rapids, Iowa, U. S. A.
Gentlemen: Please send further information about:

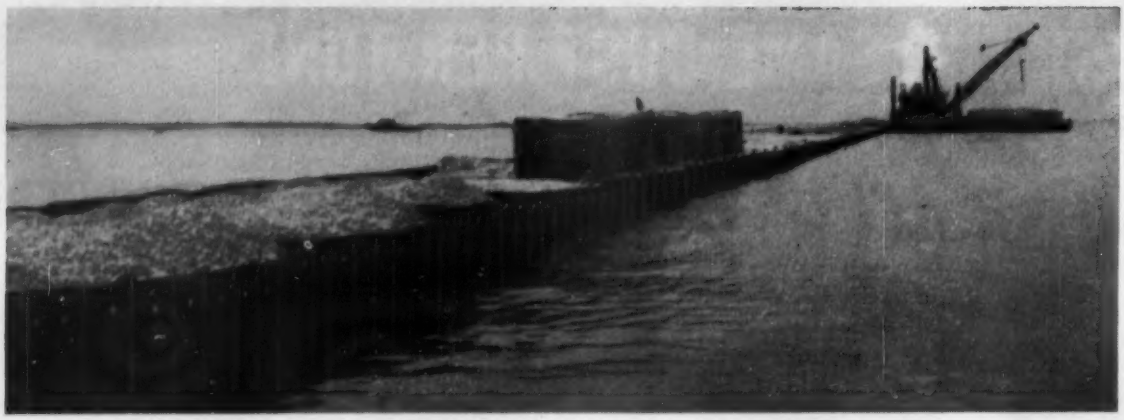
- ☐ Commander Plants
- ☐ New 30" x 25" Roll Crushers
- ☐ Other Cedarapids Aggregate Plants
- ☐ Bituminous Mixing Plants

Name _____

Company _____

Address _____

City _____ Zone ____ State ____



CELLULAR COFFERDAM WALL along the north side. This wall is to become permanent wharf; hence cells, with their vertical sides, are better suited for boat moorings. Heavy C stone for riprap is stockpiled on the gravel fill.

Great Lakes Dredge & Dock Co., New Orleans, holds the $6,597,510 contract for the cofferdam construction. FitzSimmons & Connell Dredge & Dock Co., Chicago, is the subcontractor on the job.

Dimensions of the cofferdam area are 2,043 ft on the south, 1,232 ft on the west, 2,100 ft on the north and 1,100 ft on the east. All walls will be clay core dikes except the south wall, one-third of the north wall and 250 ft of the east wall. These will be 20-ft-dia steel cells filled with stone. Since the south wall will be used as a permanent wharf, and the submerged slope of a dike would interfere with boat moorings, it was decided to use steel cells here. Deep, unstable lake-bed materials accounted for the use of the cells in other sections. In addition, use of the cells in the intake portion of the north wall as a temporary structure will result in a cost saving when the section is removed.

• **The primary requirement** in the dike construction was the preparation of a foundation that would resist compression and shear stresses of 700 psf. Test borings revealed that this bearing could be reached in a formation of uniform

(Continued on page 80)

BRUSHMASTER'S VALUE IN "BALANCED LAND CLEARING"

"A TEST . . . found that one man using a Brushmaster cleared the same ground that 5 men could clear with axes or brush hooks."

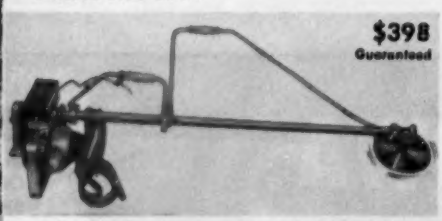
November '54 issue of Construction Methods article is talking about the

ONE-MAN POWER BRUSHCUTTER

ROWCO BRUSHMASTER



"BRUSHMASTERS SAVE MANPOWER . . . CUT LIGHT BRUSH AHEAD OF TIMBER SO DRAGGING TREES SWEEP IT ALONG LIKE A BROOM".



$398 Guaranteed

Yes, this is the famous, original lightweight power cutter, in improved design, that is the choice of full-time commercial cutters. Read the above-mentioned article and see how valuable Brushmaster is in land-clearing operations. Cuts brush, grass, weeds, saplings quickly and easily . . . is rugged and absolutely SAFE!

ROWCO BRUSHMASTER SAW, INC. 847 Emerald Street, Keene, N. H.

Other Brushcutters from $219

(Advertisement)

Shoring Methods . . . by Patent Scaffolding Co.

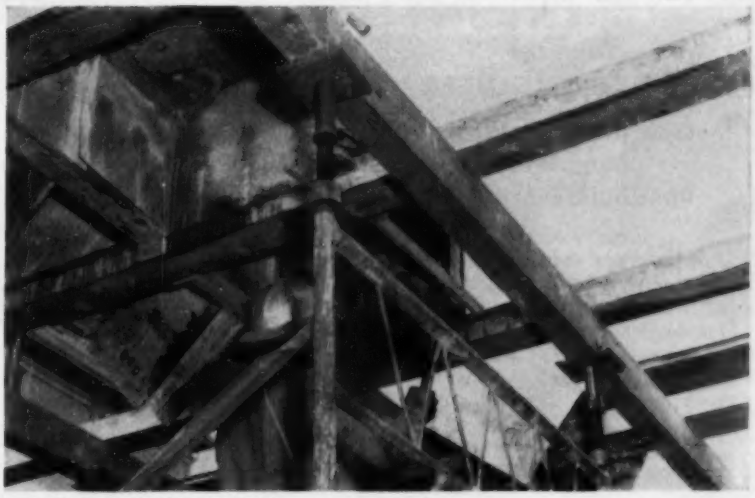
THREE ACCURATE WAYS to speed work with quickly assembled, prefabricated steel units to support forms for poured concrete are helping more and more contractors to gain substantial savings in building time and costs. Equipment for these three methods that will meet various requirements for any type of concrete construction is sold or rented by The Patent Scaffolding Co., Inc.

"Trouble Saver"® Sectional Shoring Adaptable to flat slab, flat slab with drop heads, pan joist and beam construction. Basic section is erected from 5 ft.-wide steel end frames varying in height from 3 ft. to 6 ft., 6 in. "Trouble Saver" Shoring gives safe working loads up to 509 lbs. per sq. ft. with a safety factor of 3. Safe working loads vary according to the spacing between frames and between rows of frames. 20" adjustable legs permit quick, accurate adjustment without the need of cutting, fitting and wedging.

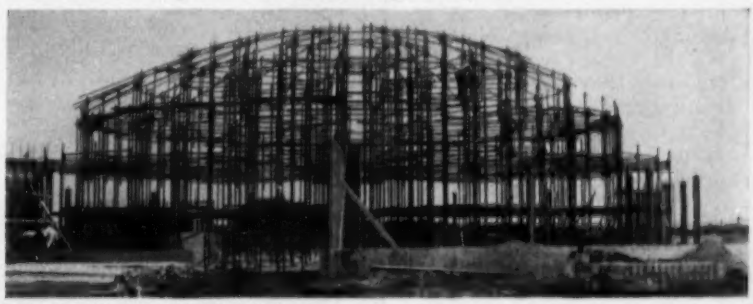
"TubeLox"® Shoring—This tube-and-coupler type shoring is ideal for meeting unusual job conditions such as extreme heights, uneven terrain and odd shapes or levels. Consists basically of 6, 8, 10 and 13 ft.-long interlocking steel tubes used with couplers and bases.

Burton Shores—A safe, sturdy single steel shore that is easily carried, erected and adjusted by one man. Rough adjustments are made by placing steel pin in adjusting holes; close adjustments with 8" long handle. Available in four sizes to provide working heights from 5 ft., 7 in. to 16 ft. Safe working capacities up to 14,500 lbs. with a safety factor of 3.

Free Bulletin—Detailed information on modern shoring for concrete construction can be found in Bulletin PSS-33, available at no obligation from Patent Scaffolding Co. Features on-the-job photos, safe-load charts and installation diagrams.



EXTRA HEADROOM for workmen nailing pan joist in place after joist bottoms are installed is provided by inverted 20" extension legs and base plates, found normally at foot of "Trouble Saver" Shoring. General Contractor Lindgren and Swinerton, Inc., uses this sectional steel shoring on Wilson Office Building, Los Angeles.



ROTUND CONTOUR of new National Guard Armory at Lawton, Okla., sloping from 37' high at the center to 16' at the edge, is easily handled with versatile "TubeLox" Shoring. Frederickson and Parks Construction Co. of Oklahoma City used 20,000 ft. of this tube-and-coupler type shoring which is ideal for such unusual job conditions.



SINGLE POST Burton Shores support forms for 4" to 7½"-thick floor slabs on two-story building at Beard School, Orange, N. J. Raised to 9 ft. here, this single post shore is available in sizes permitting working heights to 16 ft. The Fetzer Co., Inc., general contractor, is using 1,250 Shores on this job.

To help you with your scaffolding and concrete shoring methods, PS offers a complete nation-wide engineering service available to you locally. See the Yellow Pages in your 'phone directory for the nearest Patent Scaffolding office or representative that sells and rents "Gold Medal" Scaffolds.

FOR GREATER SAFETY...EFFICIENCY...ECONOMY

THE PATENT SCAFFOLDING CO., Inc.

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COMMENT
from the
BUTLER ENGINEER

One Man Operates Complete Roadbuilders Plant

Big things a-stirrin' for '55. Roadbuilders' demands for faster, more efficient equipment offer a high challenge to manufacturers and their engineering personnel. Here at Butler Bin we're ready with a mighty important development:

One man batching for a complete Roadbuilder's set-up.

Cement, fine and coarse aggregates in 3 separate bins, yet all batched by one man.

And we can convert your present Plant (regardless of make) to this new system . . . We have big news also for Roadbuilders about greater Plant portability. Check with us right away. These developments will have an important influence on your bids.

Biggest news in Ready Mixed Concrete comes from Butler, too.

A punched card now electronically batches 6 aggregates, 3 cements and water. Selection of batches is *virtually infinite.* No chance for human error. Plant is entirely automatic and completely interlocked . . . The punched cards are filed for reuse at any time — and with suitable additional equipment, could be used for automatic invoicing and bookkeeping. Card batching too, we can install in your present Plant, no matter who the manufacturer.

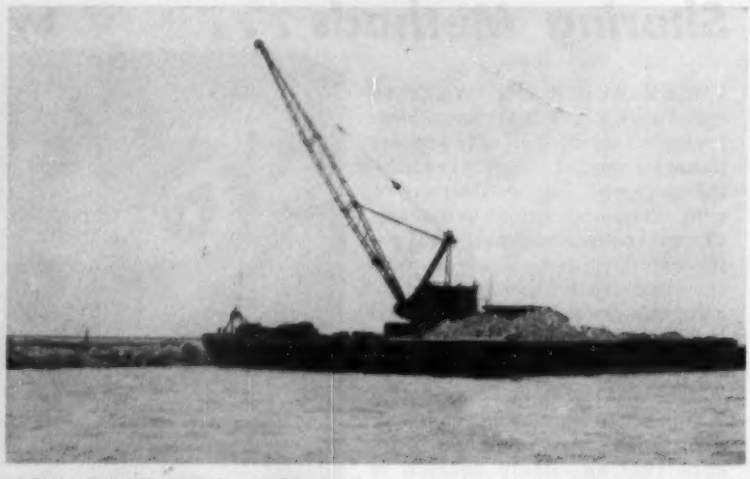
I was shoveling sidewalk snow the other A.M. Neighbor came by and said "Hi. You know this wonderful snow makes me feel *truly Yule-y!*"

Noticed when I returned that evening, a mound of new-fallen snow marked his still-undiscovered corpse.

Yours:

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN



SCOW-MOUNTED 54-B Bucyrus-Erie crawler crane with 2-yd clamshell unloads A stone from supply barge and builds up dike to grade, trimming slopes as material is placed.



← SAND ON DREDGE, brought up from lake bottom, is loaded into a bottom-dump scow by 7-yd Bucyrus-Erie clamshell that loads out from 3,500 to 4,000 yd per 24-hr day. Sand is used for fill inside cofferdam.

clay underlying unstable silt on the lake bottom.

To supply the fill for the dike core, a lake-bottom borrow area containing a similar clay was found about 2/3 mi lakeward. This homogeneous material met the necessary strength requirement and the minimum moisture content requirement of 19%. The dike has a slope of 2:1 and a freeboard of 8 ft.

Great Lakes started trenching for the dike in June, 1952. Using its Big Mogul dipper dredge, equipped with a 12-yd Bucyrus-Erie unit and powered by a 1,100-hp diesel-electric set—and another 8-yd Bucyrus-Erie on a steam dredge—silt was cut from a 140-ft-wide trench to reach the clay stratum.

Two dredges, equipped with 2-yd Bucyrus-Erie clamshell buckets, cleaned the trench bottoms. The north and west walls, which were done first, were excavated to El –25. The trench for the south wall was cut to –40, and the east wall to –25 and –32.

• **Fill was brought to the site** by bottom-dump scows which deposited their loads over the trench in three lifts to El –15. The scows ceased dumping at this elevation to permit underwater clearance for the bottom gates. Clamshells completed the fill from this point, tak-

(Continued on page 82)





Dallas Dennis, G. D. Dennis & Sons, contractors, Portland, Oregon.

"Union Oil products...exclusively for 15 years"

"It's not all mud and rain in the Pacific Northwest, as you can see from this photograph of our equipment working at Dallesport, Washington. Here we had severe dust and sand condition to contend with while building a shoo-fly around The Dalles Dam locks.

"As always, however, Union Oil lubricants protected our equipment... kept our down time to a minimum. This has always been our experience with Union Oil products. We've used them exclusively for 15 years, and in that time we've never had an equipment failure due to faulty lubrication."

Contracting firms all over the West, like G. D. Dennis & Sons, know that proper lubrication with Union Oil products solves many operating problems. Why not let your nearby Union Oil representative supply the lubricants which may well solve some of *yours?*

UNION OIL COMPANY 76
OF CALIFORNIA

Los Angeles: *Union Oil Bldg.* • ***New York:*** *45 Rockefeller Plaza* • ***Chicago:*** *1612 Bankers Bldg.* • ***New Orleans:*** *644 National Bank of Commerce Bldg.* ***Atlanta:*** *401 Atlanta National Bldg.* • ***Kansas City, Mo.:*** *612 W. 47th St.*



POWERFUL • RELIABLE • ECONOMICAL

This powerful turbo-supercharged Waukesha is a twelve-cylinder, 60-degree vee, even firing, four-cycle, solid injection, overhead valve, compression ignition Diesel, of 8½-inch bore and stroke and 5788 cubic inch displacement. The connecting rod arrangement is of the side-by-side type; opposing pistons operating from a single wide-area crankpin.

The turbocharged Diesel unit shown above develops approximately 1100 hp at 1200 rpm with radiator, fan, and air cleaners. Without turbocharging, the normal Diesel complete unit maximum rating is 800 hp. The propane-butane model of this V-12 series develops 870 hp. Bare engine ratings of all models are higher. Response to throttle and load requirements is quick and smooth, with a fast surge of reserve power for emergency and overload demands.

Tremendously powerful, remarkably rugged, this V-12 engine is designed for simplicity and reliability. Major parts are interchangeable between right and left cylinder banks. Main and rod bearings are easily accessible. Strength, precision and balance are built into all elements of the power train, from pistons to flywheel. Supporting members are designed for extreme rigidity and perfect alignment of moving parts.

Send for illustrated Bulletins 1663 (turbocharged)—1664 (normal Diesel)—1656 (gas).

266

WAUKESHA MOTOR COMPANY, WAUKESHA, WIS.
New York • Tulsa • Los Angeles

CLAY-STONE DIKE . . .

Continued from page 80

ing the clay from the scows and dropping it from a height of 10 ft above the water line, the velocity acting as an aid to compaction.

• **Protection against wave action** and erosion was achieved by placing a 3-ft layer of spoil bank stone over the clay core. Gradations for this material ranged from fines up to one ton.

Stone blocks, designated as B and C stone, were placed over the A stone on the lake side. The minimum requirement for the B stone was 3 tons, and for the C stone, 4 tons; however, in some instances, the C stone reached sizes of 12 tons.

Great Lakes used the derrick scows with clamshell and orange-peel buckets to place the A stone. The derrick scows also placed the stone blocks, using hooks. Fitz-Simmons also used three derrick scows for this work. One such scow, mounting an American Hoist with a 30-ton capacity at 40-ft radius and powered by a Johnston boiler, had a crew of five. Working closely with a transit man to keep tolerances within 6 in. of the adjacent stones, various sizes had to be tried before an exact fitting could be found. A total of 96,000 tons of A stone, 48,000 tons of B stone and 41,000 tons of C stone is being placed. The unit price for furnishing and placing the A stone is $5.10 per ton; for the B stone, $12.95 per ton; and for the C stone, $19.95 per ton.

• **To attain adequate** foundation for water-works installations, the cofferdam floor was stripped of silt by the Big Mogul and the steam dipper dredge and then backfilled to El -11. Sand is being brought in by sand boat which dredges the material from Shoals in Lake Michigan, and by dump scows loaded by a 7-yd Bucyrus-Erie clamshell dredge working in an area about ½ mi north of the cofferdam site.

This rig, working around the clock, dredges from 3,500 to 4,000 yd of sand in a 24-hr period. The dredge has a 100-ton capacity and is powered by a 420-hp Fairbanks-Morse diesel electric motor. Two forward spuds and a stern spud pin the dredge. A total of 1,040,000 yd of sand is being placed.

Construction of the cofferdam is under Chicago's Bureau of Engineering. The supervisory official is Geo. S. Salter, chief filtration engineer.

(Advertisement)



1

DUMPING CLAY & SHOT ROCK "ON THE GO," two MOVALLS on 1,000 foot haul keep 3 yard Manitowoc shovel busy on this highway job near Roseburg, Oregon. MOVALLS dumped their sticky loads clean as they turned at end of fill without stopping. Specifications required dumping on top, dozing over edge as shown. D & H Construction Co. and M. H. Hasler Construction Co., contractors.

C & D MOVALL GIVES YOU POSITIVE EJECTION, CONTROLLED DUMP OR SPREAD

End-dump wagon for Caterpillar DW20 or DW21 tractors handles rock, dirt, clay, mud. Capacity 31 tons, 25 yards heaped

C & D MOVALL's exclusive cable-powered ejector gives whistle-clean, fast dumping of any material—even wet, sticky clay or frozen ore. Discharge rate is controlled by operator; he can spread at any desired depth on the go, dump at controlled rate into a hopper, or eject full load in 12-14 seconds over the edge of a fill. Center of gravity stays low when dumping, and all wheels can be braked for added safety.

MOVALL has 11'x19' target area, 8' height, (10'4" at front) for easy spotting, faster loading with shovel, dragline or belt-type loader.

The power and speed range of Caterpillar DW20 and DW21 prime movers, plus the MOVALL's exceptional stability, assures maximum speed and safety on long or short hauls and grades. Maneuverability is excellent; MOVALL DW20 unit turns in 30 foot width.

Yoke design makes it easy to interchange DW20 or DW21 tractors, switch from MOVALL to No. 20 scraper or vice versa; MOVALL uses standard Caterpillar cable PCU.

If you own a shovel, dragline or belt-type loader, add a Caterpillar-powered MOVALL and you're equipped for the widest possible range of work—moving rock, earth, mud, ore, spreading sub-base and surfacing materials for airport and highway construction. Why limit yourself to a "single-purpose" haul unit—get an all-purpose MOVALL. Investigate—see your Caterpillar distributor or write us now for specifications, prices, demonstration on your job. C & D MANUFACTURING COMPANY, Perkins, California (Suburb of Sacramento), Phone Hillcrest 5-8592.



Gets back on new slab sooner — speeds paving schedules

KOEHRING 16-E *twinbatch*® paver on rubber tires is as mobile as your batch trucks. It works on or off-pavement — can get back on new slab in as little as 7 days to pave adjoining highway strips, scattered intersections, approaches to driveways and side roads. This time-saving "run-about" makes self-powered moves at 9 m.p.h. Yet, for all its mobility, the Koehring 16-E *twinbatch* is primarily a production paver — exceeds the output of large single-drum pavers on main highway work. For instance —

On straight-production paving, the Koehring 16-E hits a top output of 86.7 batches an hour (based on 60-second mixing cycle). This *reserve* production capacity with *twinbatch* Autocycle mixing offsets normal job delays — lets you pick up lost time which cannot be made up with a limited production single-drum paver.

Averages 50 cu. yds. an hour

As a result, the Koehring 16-E *twinbatch* easily maintains an average of over 76 batches an hour — 8 hours a day. Based on 16 cu. ft. per batch, plus the usual 10% overload, this assures you 50 cu. yds. of concrete per hour — with a small crew — on your main-highway paving jobs.

While its usefulness is unlimited as a general-purpose paver, this versatile Koehring 16-E also serves as a mobile concrete mix plant. On construction of curbs, gutters, culverts, bridges, pilings, it discharges into overhead hoppers, forms, chutes, or loads trucks. Elevating boom reaches up and out 60° — gives controlled discharge at 21-foot height (higher with special boom).

See for yourself how the big production capacity, overall versatility, and rubber-tired mobility of this Koehring 16-E *twinbatch* can put you miles ahead on your paving schedules. Get all the facts from your Koehring distributor, or write us for 16-E catalog. Big 34-E *twinbatch* is also available for major highway, airport paving.

KOEHRING Company
Milwaukee 16, Wisconsin

(Koehring Subsidiaries: JOHNSON • PARSONS • KWIK-MIX)

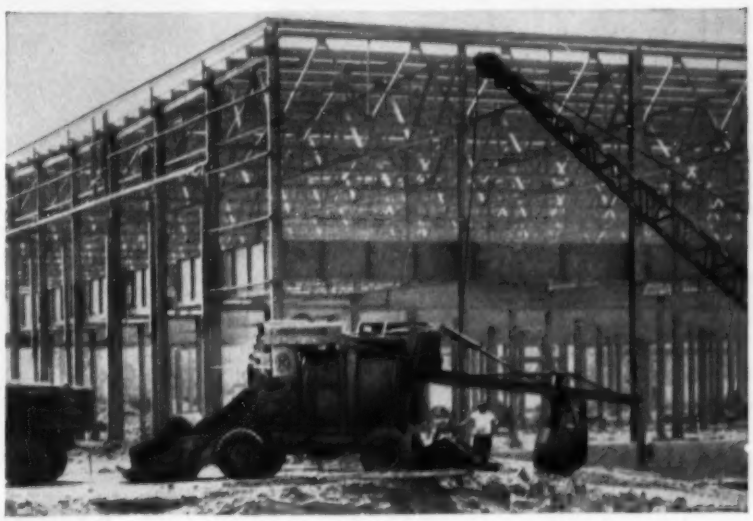
Big rubber-tires are easy on the sub-grade

Notice how there's little or no scuffing on the sub-grade with a Koehring rubber-tired 16-E paver. When working between forms, flotation of the big 11:00 x 20 pneumatic tires protects the grade against surface damage — saves unnecessary filling and re-leveling. This rubber-tired advantage also lets the Koehring 16-E *twinbatch* work on pavement without planking to pour adjoining slabs, widen highway and airport strips, pave intersections, pour concrete for curbs, gutters, culverts.



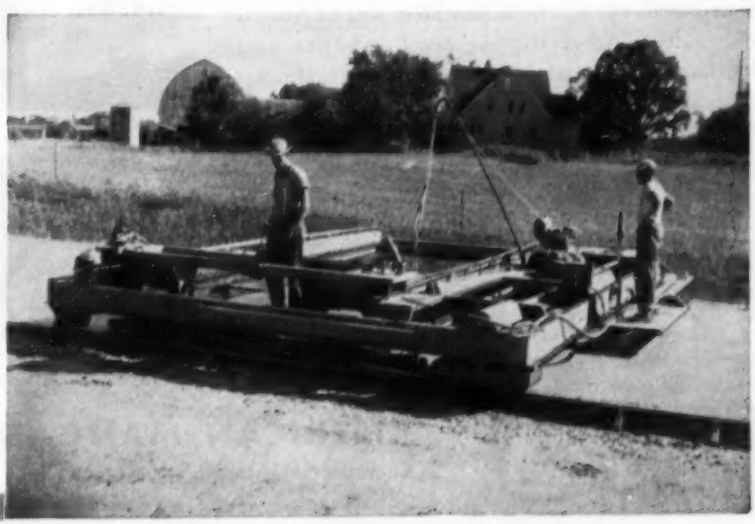
Mobile 16-E paver serves as a concrete mix plant

On building construction, versatile Koehring 16-E *twinbatch* pours footings, floors, columns — is never "grounded". Power-controlled boom swings in a 160° arc, or elevates 60° for overhead discharge — locks and holds in any position. Controlled-discharge bucket dumps anywhere along the 25-foot boom, can be opened or closed at any time for gradual discharge. Water-level capacity of bucket is 24 cu. ft. That's more than ample capacity to hold the full 16 cu. ft. batch of concrete, plus 10% overload.



Precision finisher keeps up with any paver

"Timely", precision-finishing is important on any paving job. Operating at almost twice the speed of a 34-E paver, Koehring Longitudinal Finisher handles all practical consistencies of concrete—harsh, wet or dry. It overcomes slump difficulties on grades and elevated curves. Produces mechanically accurate concrete slab surface, 8 to 30 feet wide, with uniform crown transitions.



Here's Where **AMSCO**®

"Wear-Sharp" Repointers

INCREASED DIGGING LIFE 8 TIMES



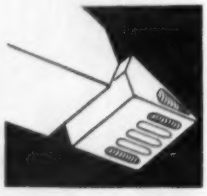
On a particularly rugged digging operation, Amsco manganese steel "Wear-Sharp" repointers increased the dipper's active service period by 8 times . . . operating an average of 32 days without repointing, as against 4 days for the type previously used.

Extend repointer or dipper tooth life on your dippers with Amsco "Wear-Sharp" repointers. When you fill their end grooves with Amsco hardfacing rod, you protect the tooth at the 6 points of maximum wear. This prevents corner blunting and equalizes wear along the entire cutting edge so that the tooth *stays sharp.*

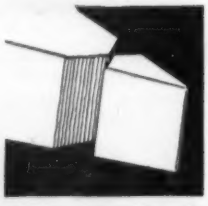
Order Amsco repointers from your Amsco distributor. He carries a complete line of Amsco manganese steel dipper teeth, shapes and hardfacing materials.

Besides manganese steel, Amsco makes other alloy steels with high resistance to impact and abrasion.

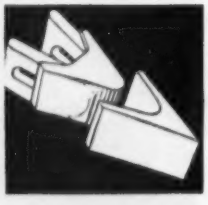
FACTS ABOUT 3 TYPES OF AMSCO REPOINTERS



"Wear-Sharp" Repointer (patented)—To equalize wear and maintain a sharp cutting edge, grooves on each end and on corner faces can be filled with a tough hardfacing deposit. It prevents the tooth from rounding or blunting. Teeth stay sharp, helping to maintain digging speed and to conserve power. Available straight (shown) or with crescent-shaped backs.



Repointer Bars—Excellent for rebuilding teeth used in heavy digging, these repointers are made of tough, wear-resistant manganese steel. They are delivered in bars of 3-foot length and cut to the width of the tooth on the job. They are also being used for rebuilding lips on dippers, clamshell buckets, ore loaders and dragline buckets.



Cast-to-Shape Repointers—Ideal for less severe digging, these manganese steel repointers are easy to weld on. An average-size tooth can be completely rebuilt in about 15 minutes, using only two electrodes. Cast with "ears" that protect the flat sides of the tooth, these repointers add strength and service life to the entire tooth.

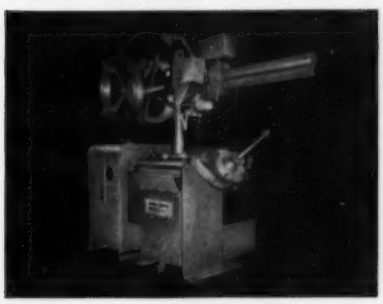
AMERICAN Brake Shoe COMPANY

AMERICAN MANGANESE STEEL DIVISION
Chicago Heights, Ill.

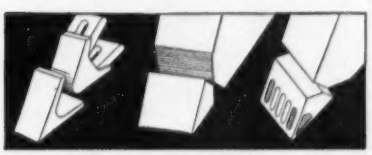
THE AMSCO® HARDFACING LINE IS COMPLETE . . .



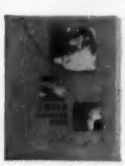
Hardfacing Rods and Electrodes . . . A complete line of manual and automatic build-up and hardfacing materials. One for every repair job. Amsco rods and electrodes contain alloys of the toughest, hardest metals known including manganese steel.



Automatic Welders . . . The Amsco-Leader line of welders permits fully automatic build-up and hardfacing, especially in fields using heavy-duty equipment. Welding positioners and power unit included in package.



Amsco Repointers . . . Add the long wearing quality of manganese steel to digging equipment. All you do is weld them on. Available also are rounds, squares, flats, plate, grouser bars, electrodes—all made of manganese steel.



Free Booklets . . . Make it easy to select the proper Amsco hardfacing rods—or manganese steel shapes. Ask your distributor or write for these detailed booklets. Request No. 953 (hardfacing) and No. WA-77 (repointers, grouser bars, filler bars, plate).

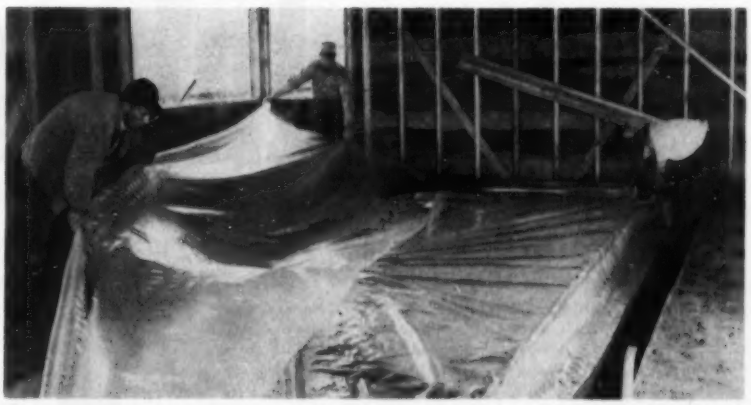


Your Amsco Distributor can supply you with the entire Amsco line . . . make him your HARDFACING HEADQUARTERS.

AMERICAN MANGANESE STEEL DIVISION

AMERICAN Brake Shoe COMPANY

Chicago Hts., Illinois



POLYETHYLENE FILM available in 16-ft widths is finding many new uses in the construction field. It will retain its flexibility in extreme hot or cold weather and is tough.



FILM USED IN BASE OVERLAPS will prevent penetration of moisture. The overlapping adheres to wall with asphalt until concrete is poured which makes permanent adherence.

Plastic Film Is Permanent Moisture Barrier

PLASTICS, in one form or another, have been making steady inroads into the construction industry the last few years and now a newcomer, a thin, tough pliable material known as polyethylene film is being introduced to eliminate the long-time problem of penetration of moisture vapor.

One brand of such material being marketed under the name of Visqueen by the Visking Corp. of Terre Haute, Ind., is a pure seamless plastic, chemically inert, that will not dry out or rot. It will retain its flexibility in extreme hot or cold weather and is non-inflammable. It lies flat or is applied to walls by stapling to studs. It's available in thicknesses from .002 to .020 in widths up to 16 ft. Cost is around 1½c per sq ft.

It can be used under concrete slabs, eliminating the need for a gravel or stone base. When used under slabs and basement floors, the film will prevent moisture from passing through.

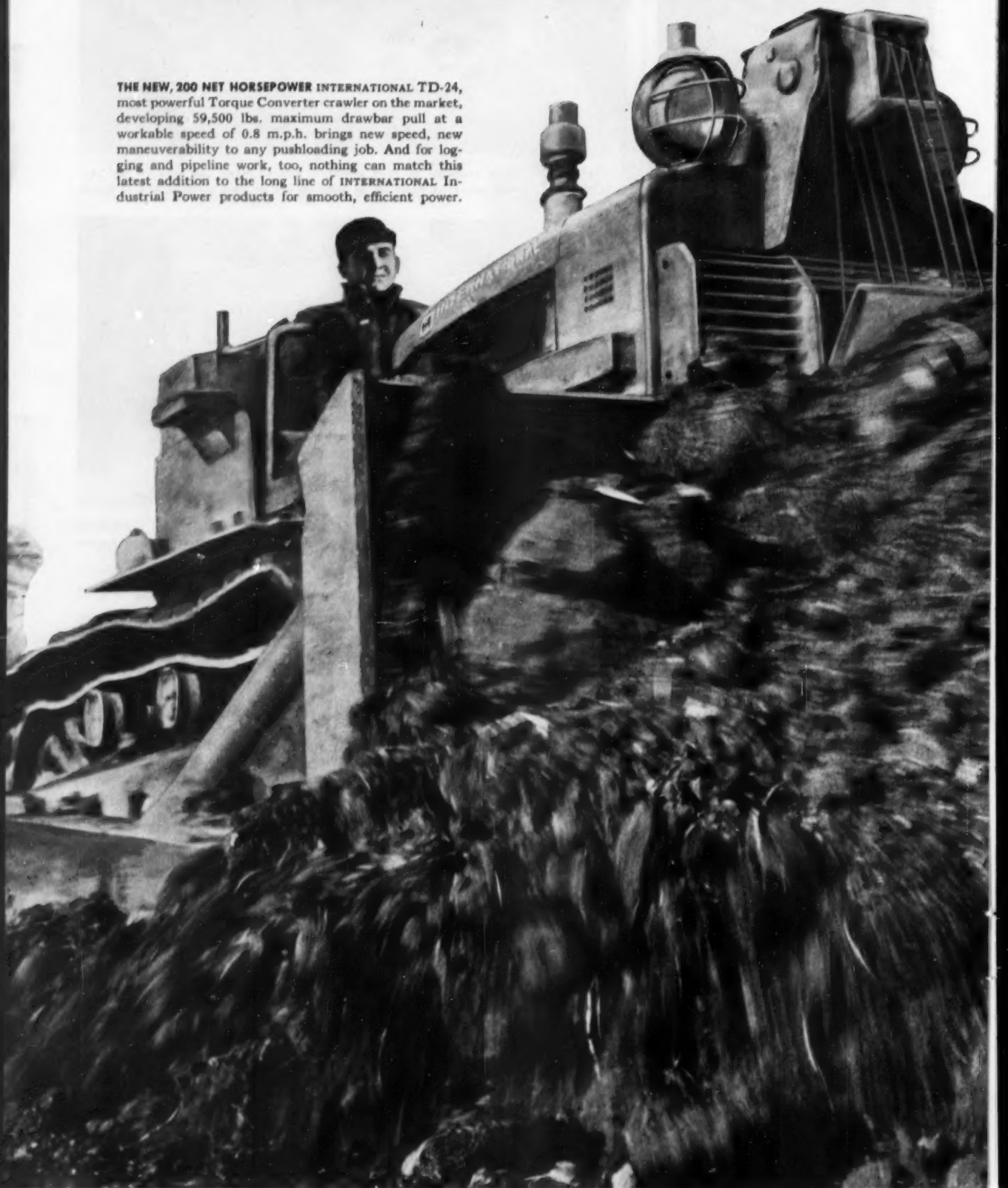
If placed in forms for foundation walls, the material provides permanent protection from the passage of moisture, and water through the walls. No other waterproofing is necessary.

It can be used over sub-flooring to make it dust-proof and air-resistant. When applied to the warm sidewall of a structure, it will eliminate condensation.

It's effective as a vapor barrier in the crawl space of a building. The material is simply laid on the ground and covered with a layer of sand to help keep it in place. It can also be used for flashing, alleys, and as a termite shield.

PRESENTING THE NEW International

THE NEW, 200 NET HORSEPOWER INTERNATIONAL TD-24, most powerful Torque Converter crawler on the market, developing 59,500 lbs. maximum drawbar pull at a workable speed of 0.8 m.p.h. brings new speed, new maneuverability to any pushloading job. And for logging and pipeline work, too, nothing can match this latest addition to the long line of INTERNATIONAL Industrial Power products for smooth, efficient power.



TD 24 TORQUE CONVERTER

Torque Converter

Greater power—200 net engine h.p.; greater pull—59,500 lb. maximum drawbar pull at 0.8 m.p.h.; matchless maneuverability—finger-tip steering with famous Planet Power Drive in combination with four forward and four reverse speeds; all the features that mean greater operator ease, greater operational economy on your biggest jobs

For the largest earthmoving projects . . . for laying big pipe faster and surer . . . for attaining new highs in logging production . . . this is it.

The new INTERNATIONAL 200 horsepower TD-24 Torque Converter crawler tractor.

Features that put the new Torque Converter TD-24 in the No. 1 spot include:

- World's most productive torque converter system—multiplies torque up to five times.
- 200 net engine horsepower converted into 59,500 lb. maximum drawbar pull at 0.8 miles per hour.
- Finger-tip hydraulic control with INTERNATIONAL's famous Planet Power Steering in combination with four forward and four reverse speeds to 6.9 miles per hour for matchless maneuverability, unequalled profit-making performance.
- Instantaneous high-low range shift with all transmission shifting being done with *just one gear shift lever.*
- INTERNATIONAL's exclusive "Decelerator" feature gives the operator complete control of the crawler's engine speed at all times. In pushloading, this enables him to match the speed of the pusher to that of the scraper and make smooth contact without jarring pushed equipment or its operator. It takes the shock loads out of shifting . . . gives a smoother performing machine on the pipelines and pulling belt loaders, as well as on 'dozing jobs.

All attachments to the standard INTERNATIONAL TD-24 are interchangeable with the Torque Converter model, including push-plates, bulldozers, *Bullgraders* and sidebooms.

For the smoothest package of power you ever saw in action, contact your INTERNATIONAL Industrial Power Distributor today. Ask for a demonstration of the INTERNATIONAL TD-24 Torque Converter . . . the most efficient torque converter crawler for any big job.

INTERNATIONAL HARVESTER COMPANY,
CHICAGO 1, ILLINOIS

INTERNATIONAL HARVESTER

INTERNATIONAL®
INDUSTRIAL POWER

MAKES EVERY LOAD A PAYLOAD



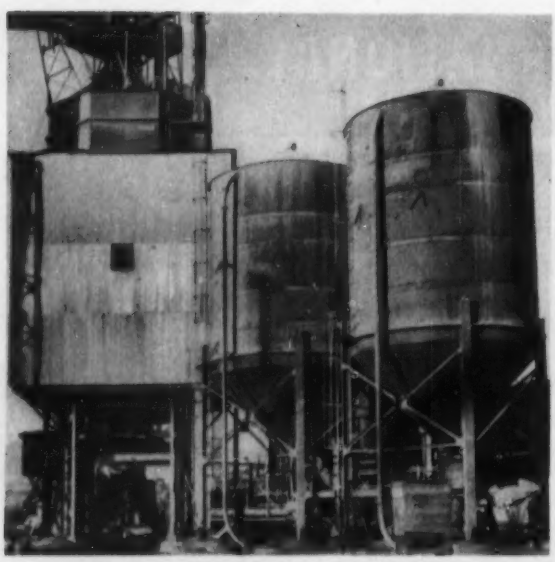
PUSHLOADING is faster, easier with an INTERNATIONAL TD-24 Torque Converter. When the new crawler is paired with INTERNATIONAL high-speed earthmovers, contractors have a combination that can't be touched for long-haul performance. You get the heavy push you want at the speed you need for steady contact without gear shifting. This great power plus control means far greater safety, far less wear and tear on men and equipment.



Clyde Whirley and Washington cranes serve the powerhouse when...

Two Contractors Pour The Dalles Dam

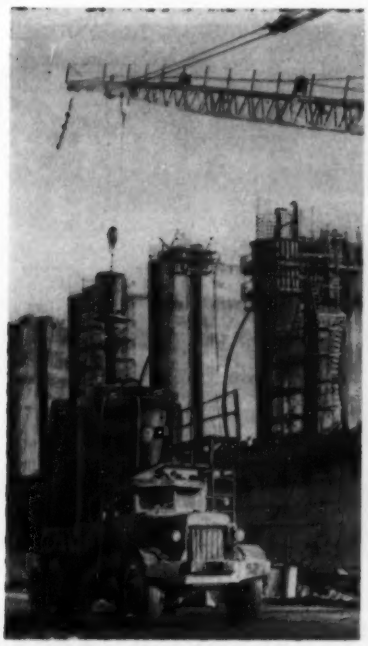
By L. L. WISE, Associate Editor



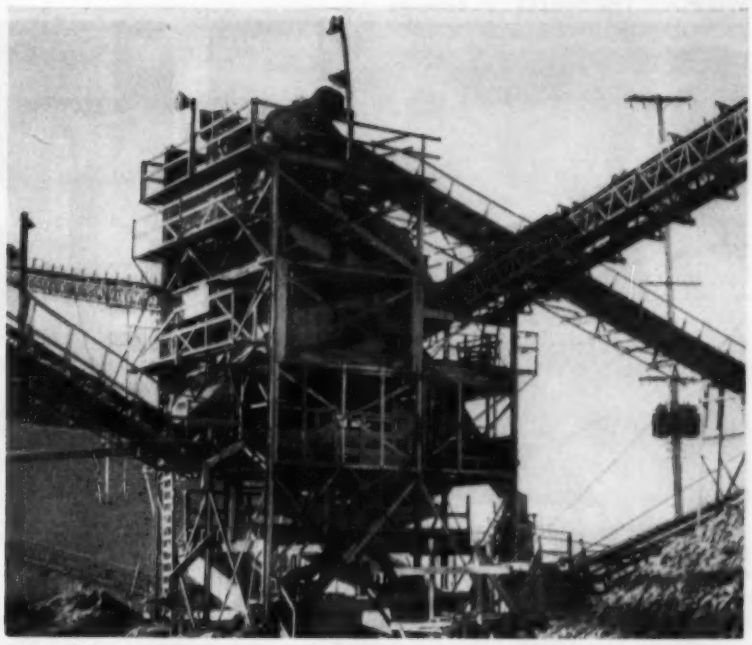
CONCRETE BUCKETS ON TRAIN are charged under Johnson batch and mix plant with four 4-yd Koehring mixers for Atkinson-Ostrander operations on the spillway and powerhouse.



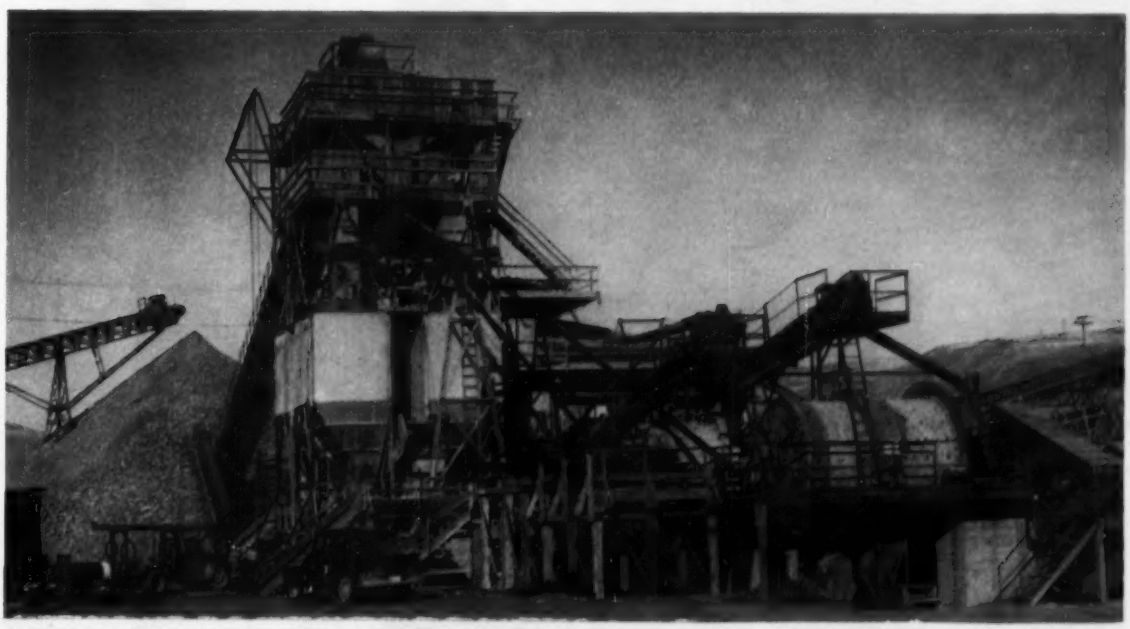
QUICK-DUMPING of concrete out of modified Koehring Dumptor (see also front cover this issue) minimizes segregation in transfer from haul truck to 4-yd Blaw-Knox bucket.



DART TRUCK HAULS two 4-yd Gar-Bro buckets filled with concrete to areas not reached by trains. Spillway is being poured.



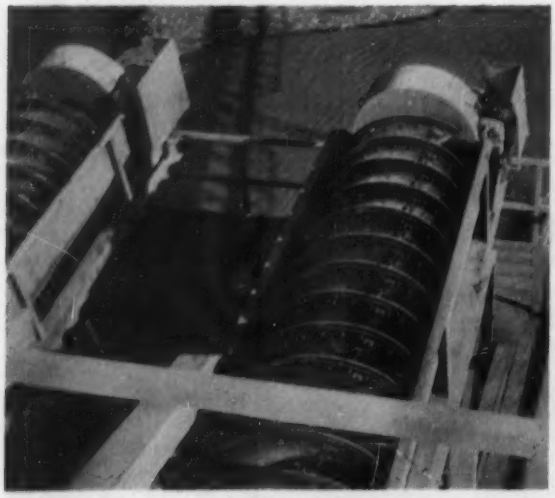
SCREENING PLANT for Curtis Gravel Co., subcontractor for The Dalles Powerhouse Constructors, is located at the borrow pit 3-mi from construction area. Plant centers around Simmons vibratory flat-deck screens. Some sand is trucked in, blended by Eagle units.



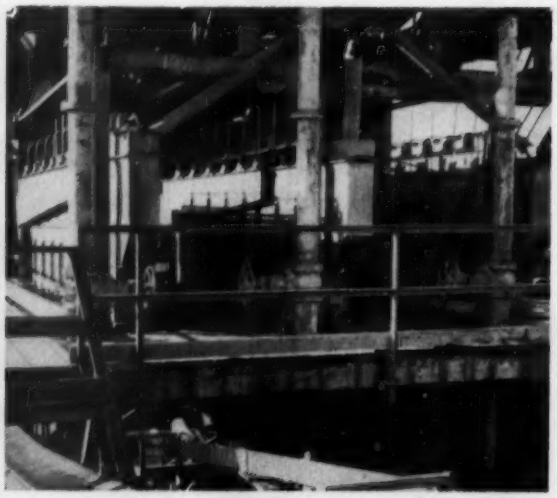
AGGREGATE PLANT for Atkinson-Ostrander Co. located in construction area where adequate water and drainage are available for crushing operations. Includes Marcy rod mills and other crushing equipment to make up sand deficiencies.

CONCRETE PRODUCTION ranging from 4,000 to 6,000 yd daily has been the rule for The Dalles Dam on the Columbia River in Oregon. This output is produced by two contractors with two separate aggregate processing and concrete-mixing installations. The Dalles will be a run-of-the-river type of power and navigation structure with a spillway section and powerhouse section blocking the flow of water. Construction includes the placing of 1,500,000 yd of concrete.

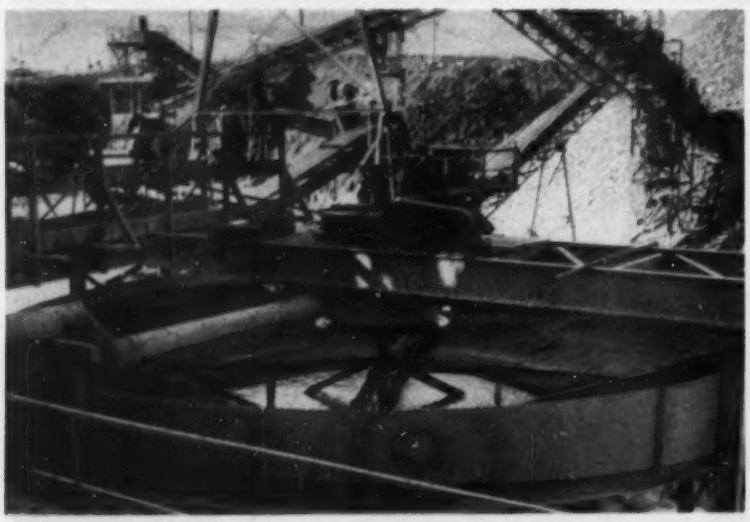
One contractor, The Dalles Powerhouse Constructors, holds a $30 million contract for a major portion of the powerhouse. The other contractor, Atkinson - Ostrander Co., holds three contracts totalling $45 million for the spillway, part of the powerhouse and the navigation lock. The latter contract is just getting under way so Atkinson-Ostrander Co. emphasis has been on spillway and powerhouse



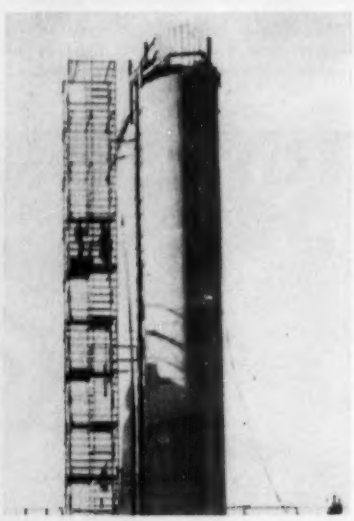
SCREW DEWATERING UNIT, a Western Machinery Co. product, in the Atkinson-Ostrander sand plant stabilizes water-sand ratio before material is conveyed to sizers.



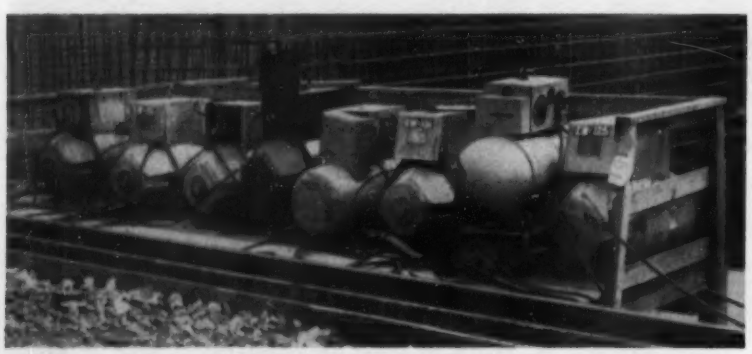
POCKET SAND SIZERS control sand gradation. These three Dorr units have 8 pockets each and require a water supply of 1,000 gpm for full production.



BOWL HYDRO-SEPARATOR controls sizes passing 100-mesh screen. This is a 32-ft dia Wemco installation, helping to meet the tight sand specification written into the spillway contract which calls for much mass concrete with relatively lean concrete (2½ sacks per yd.)



ACCESS TO SPILLWAY PIERS is by Beatty Safway scaffold. Timber ladder wells were used at first, but tubular steel units are safer.



BATTERY OF WELDING MACHINES is located centrally to serve reinforcing steel-placing operations on The Dalles powerhouse. Machines are General Electric and Lincoln units.

concrete placing for the present.

Basic difference in aggregate-producing facilities is that Powerhouse Constructors working through a subcontractor — Curtis Gravel Co. of Spokane—include a screening plant, with fine sand imported, whereas Atkinson - Ostrander has extensive crushing facilities. The Powerhouse Constructors plant is located at the borrow pit 3 mi from the dam near adequate material supplies.

Concrete placing differs, too. The Dalles Powerhouse Constructors use quick-dumping Koehring

(Continued on page 94)

What's the news in big gravel plants?

- **Is it the overhead eccentric jaw crusher?**
  Universal introduced it in 1906.
- **Is it the 4' x 12' 2½ deck gyrating screen?**
  The Senior "R" has had it since 1952 — and with a full 48 sq. ft. of working area.
- **Is it the 30 inch conveyors?**
  The 880 Senior "R" has featured them since 1952.
- **Is it designed to meet highway weight limitations?**
  Universal's 880 Senior "R" has met this requirement since 1952.



The Real news is what's new in the Universal 880 SENIOR "R"

- **New 30"x26' Roll Crusher**
  Now, the greatest secondary crushing capacity ever offered in a plant of its weight class.
- **New Head Drive Front Delivery Conveyor**
  Gives you a smoother, faster delivery of the Senior "R"'s tremendous output.
- **New Dual Clutch Control On Front Delivery Conveyor**
  Now, the rapid discharge can be controlled from either plant or ground providing real convenience, economy and control at all times.
- **New "Outside of Plant" Jaw Adjustment**
  Now, you can change the 1036 primary jaw discharge opening quickly and take full advantage of any changes in pit conditions. This feature reduces downtime and increases your overall production.
- **New V-Belt Drives**
  Modern, simplified—engineered for more efficient and trouble-free operation.
- **New Extended Operator's Platform**
  Gives you greater convenience in operating the plant.

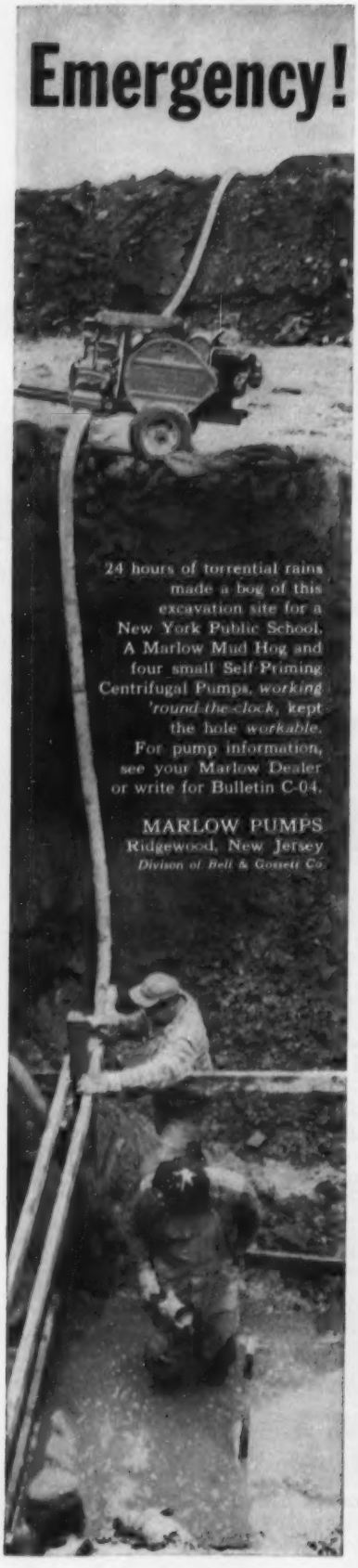


The Universal 880 Senior "R" continues to make high-production and big profit news. Its easy portability and flexibility make it the ideal plant to handle most gravel crushing operations. Now, with these new features, the Senior "R" will give you even bigger production with easier, more convenient operation. Compare before you buy and you'll buy the Universal 880 Senior "R". Write for bulletin today!

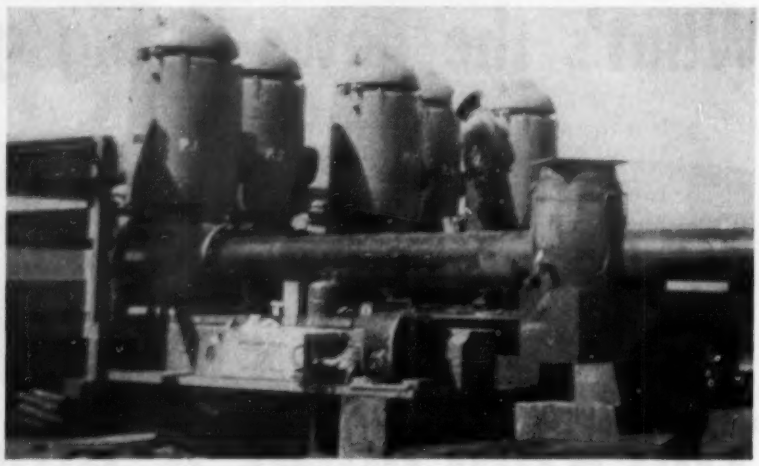
PETTIBONE UNIVERSAL
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TWO POUR THE DALLES . . . Continued from page 92



BATTERY OF PUMPS helps dewater huge cofferdam area. Pumps are 5,000-gpm Johnston units driven by 200-hp motors and delivering against a 120-ft head through Naylor pipe.

Dumptor trucks to haul mix to the powerhouse. This is the first Corps of Engineers job where such mix transfer has been sanctioned.

Atkinson-Ostrander dumps mix directly into buckets that are hauled either by rail car or by truck to the point of pickup by one of the revolver cranes.

Basic reason for the difference in the aggregate plants is that the first Atkinson-Ostrander contract included a sand specification requiring close control over fine sizes. Mass concrete in the spillway is relatively lean—2½-sack mix—and carefully graded fine sand is needed for such mixes. Natural sand available is gap-graded and deficient in fine sizes, and Atkinson-Ostrander chose to crush in order to make up the deficiencies.

Both contractors have similar batching and mixing facilities. The plants include Johnson batching plants and four 4-yd Koehring mixers. The Atkinson-Ostrander plant is new for the job.

But the Powerhouse Constructors plant was obtained on a hurry-up basis after their original plant collapsed last year. Fortunately, the plant used at Detroit Dam by Consolidated Builders had been dismantled and was loaded on rail cars on a siding when the collapse occurred. The Consolidated Builders plant was quickly obtained and set up. Total time out of production was only 28 days. And concrete placing was back on schedule within three months.

New Standard for Form Plywood

U. S. COMMERCIAL STANDARD CS45-55, effective February 1, 1955 includes several changes in requirements for fir plywood used for concrete forms.

Grading rules for outer veneer in low-cost re-usable Interior and Exterior type Plyform now permit a limited number of surface "tunnels" no more than 1 in. long and 1/16 in. across, and a limited number of holes 1/16 in. in dia. Tests show that these and other minor changes have little or no effect on the concrete surface.

Where a smoother surface than that provided by Plyform is desired, exterior or interior grades with one or both faces of "A" veneer may be used.

For highly finished architectural concrete, the new standard sets forth the requirements for high density overlaid fir plywood, with a glass-smooth, ultra-hard surface that completely eliminates grain pattern from concrete.

Among other things, the standard provides for a new underlayment grade, two natural finish items, and an improved glue for interior grades.

Copies of the standard are available without charge from the Douglas Fir Plywood Association, Tacoma 2, Wash.

HANDLE WITH ABANDON!

U. S. Matchless Wire Braid Air Hose

No "babying" needed here! U. S. Rubber Engineers designed this premium quality hose with more than enough brute strength and stamina to withstand the *highest* working pressures, the *toughest* construction conditions.

And U. S. Matchless® has *proved* its ability to take both use and abuse *indefinitely*—on jobs around the world—serving long after ordinary hose has been ruined by abrasion, crushing and high pressure.

Yet in spite of its great strength, U. S. Matchless is highly flexible—practically as easy to handle as a garden hose.

Mandrel-made, wrapped-finish U. S. Matchless Wire Braid Air Hose is available in 50 ft. lengths from any of our 27 District Sales Offices, or by writing to the address below. *Whatever* your hose requirements, you'll find it *pays* to turn to "U. S." There's a job-engineered U. S. Hose for practically every purpose—a staff of "U. S." Engineers to assist you in your hose selection.

- tube of high quality neogrene is completely resistant to line oil
- special steel wire braid gives tremendous strength, permanent bonding assured by heavy gauge rubber layer
- additional layer of rubber under specially coated rayon breaker protects wire against corrosion should cover be cut or damaged
- cover of carefully selected, tough brown natural rubber fights off injury from rocks, tools, and heavy equipment

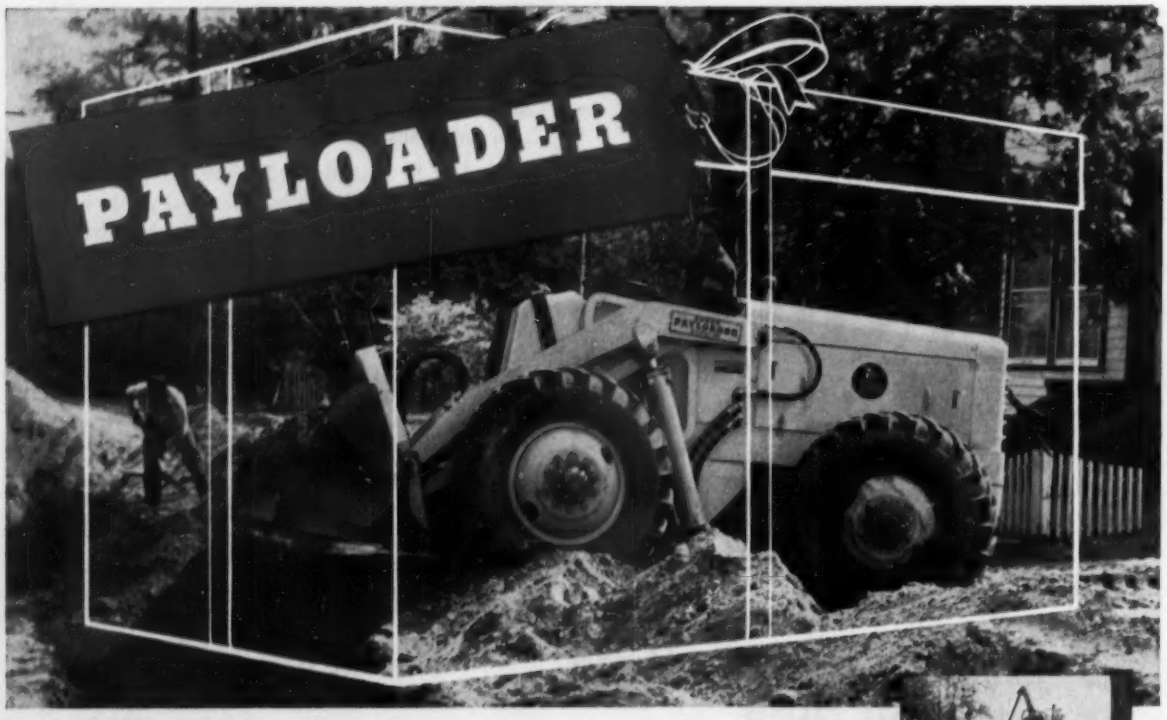


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FIVE machines in a SINGLE package

The well-known versatility and usefulness of "PAYLOADER" tractor-shovels are greatly increased by a complete line of attachments provided for them. Many of these attachments are designed specifically for and available *only* on the "PAYLOADER" line — enabling your "PAYLOADER" to handle a greater range of jobs than any other tractor-shovel.

So when you want a package of complete tractor-shovel usefulness — a single machine that can do more jobs on more projects — your best bet is a proven "PAYLOADER". There's a model and size to fit your needs.



BACK HOE
Dig trenches, tank pits, bell-holes, foundations.



CRANE HOOK
Lift, load, carry and place steel, pipe, timbers, forms.



LIFT FORK
Handle all kinds of unit loads on or off pavement.



BACK-FILL BLADE
Back-fill trenches, walls, abutments — level and spread.

OTHER USEFUL ATTACHMENTS
Scarifier teeth; special buckets; winch; pusher plate; cab; pick-up street sweeper; snow plows — rotary, "V", and blade.

THE FRANK G. HOUGH CO.
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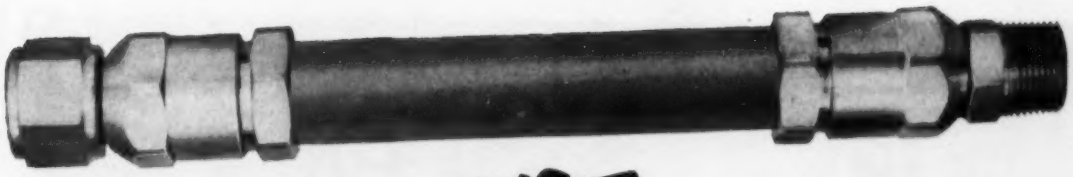
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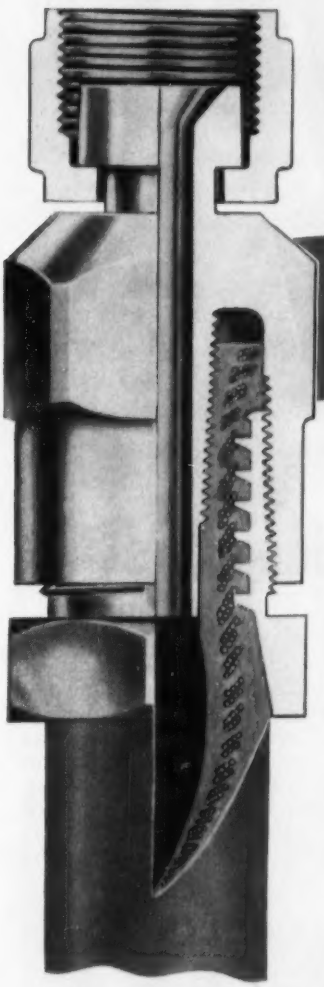
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ANNOUNCING— JOY SURGEPRUF

HYDRAULIC HOSE and RE-USABLE COUPLINGS



The NON-SKIVE COUPLING with the "DOUBLE-WEDGE GRIP"

1 PERMITS THE USE OF MORE ABRASION-RESISTANT, RUBBER-COVERED HOSE

Now you can *insure* longer wear in your hydraulic hose assemblies! You can use tough, abrasion-resistant, rubber-covered hose instead of braided hose—and at the same time you can save assembly time by avoiding old-fashioned skiving. Joy Surgepruf couplings make *both* advantages possible. Their exclusive "double-wedge" grip lets you secure the extra long-wearing qualities of rubber-covered Surgepruf Hose without any need for skiving the hose at the connection.

2 NO SPECIAL ASSEMBLY TOOLS REQUIRED

No mandrels or other special tools are required to make up Surgepruf assemblies . . . no extra expense or special technique is involved.

3 CAN BE RETIGHTENED WHEN LOOSE ON THE HOSE

Machine vibration or hose flexing can loosen any hydraulic coupling on the hose in time, but Surgepruf Couplings can be easily, quickly retightened on the job to stop a leak—*another* exclusive feature.

Surgepruf Hose Couplings are made to JIC Standards. Assemblies are available in many sizes and lengths, and in both single and double-wire reinforced types for medium-high and high pressure service respectively.

These hydraulic hose assemblies, as shown above, are interchangeable with the assemblies now in use on any hydraulically-controlled equipment you may have. ● *Order replacement sizes for your machines—prove the merits of Surgepruf for yourself.* **Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.**



Consult a Joy Engineer

Get complete data on Surgepruf: WRITE FOR BULLETIN H-100d

WRD H94398

JOY

HYDRAULIC ASSEMBLIES THAT GIVE YOU MAXIMUM RELIABILITY



John Beuerlein and family enjoy new permanent home since...

Koss Company Has Winter Headquarters

SIXTY PER CENT of the skilled machine operators of Koss Construction Company's Sunflower Division in Kansas work the year 'round—quite an accomplishment for a contractor who has to shut down construction work during the winter. And employee morale has improved appreciably. For example, Grading Superintendent Lloyd Arnote is shopping for a house for the first time in 17 yr of marriage.

Koss sets up a specific winter headquarters, a permanent mobilization center at Topeka for comple winter overhaul and maintenance. When spring comes, men and equipment are moved back to the job—right to work—on schedule. Every machine is in good condition, and there always is a sizable nucleus of skilled manpower.

The Koss Construction Company was organized in 1914, has been a paving contractor since the mid-twenties and maintains its general offices in Des Moines, Iowa. Since the war, the operation was split into the Show-Me Division, operating out of Springfield, Mo., and the

Caterpillar Photos



WAITING THEIR TURN inside the specialized repair shops in the background, tractors, scrapers and graders are lined up neatly in one section of the spacious yards. Simple maintenance and complete teardown and overhauls are handled.



One of Rowe Construction's 50 pieces of heavy machinery

"DOWN-TO-EARTH PERFORMANCE WITH CITIES SERVICE LUBRICANTS"

"Up to 12,000 hrs. before overhaul with Cities Service C-300 Motor Oil," says Delmar Rowe.

For the last 30 years, Delmar Rowe has been building roads. And for the last seven years, Cities Service Lubricants have paved his way to greater profits. The firm is Rowe Construction Co., Bloomington, Illinois... and since 1925, it has not only built countless roads, but has also reclaimed land, supplied gravel, and constructed sewers and water mains throughout the Bloomington area.

Rowe's choice of Cities Service Lubricants was no hit-or-miss proposition. "At that time," he says, "I'd had 23 years observing down-to-earth lubrication problems with construction machinery...and I was determined to find lubricants that gave the down-to-earth performance to solve these problems. Cities Service supplied the answer."

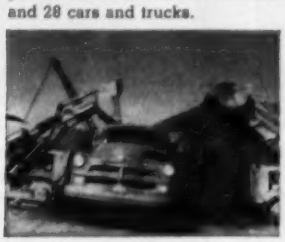
HOW RIGHT WAS ROWE? His Cat motors are a good example. They now run as long as 12,000 hours before overhaul using Cities Service C-300 Motor Oil. He reports: "There's no sludge or carbon problem and bearing life has been excellent. Other pieces of equipment show similar results. Obviously, we're saving on maintenance costs, and obviously it's showing up in the profit column."

Delmar Rowe is but one more construction man who's found Cities Service Lubrication the road to increased efficiency, lowered costs. Why not learn what it can do for you? Contact your nearest Cities Service representative or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

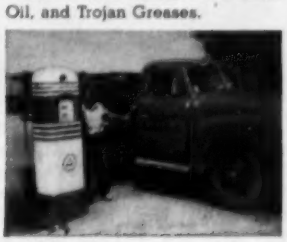
CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Tough Jobs for Tough Machines. Rowe has 50 pieces of heavy machinery constantly at work, including 8 drag line cranes, 2 crushing plants, 4 bulldozers, 5 end loaders and 28 cars and trucks.



One of Rowe's 19 Dump Trucks fills up with Cities Service Gasolene...a powerful treat for a hungry engine. Rowe also uses Cities Service Diesel Fuels, C-300 Motor Oil, and Trojan Greases.



The bonus in the bucket



Watch this demonstration of the MICHIGAN Bonus



1. 300% Torque Multiplication
Watch the powerful crowding action —forcing the bucket into the pile. The Clark Torque Converter provides that smooth, shockless power—as resistance increases, you get more torque automatically—*up to 300 per cent.*

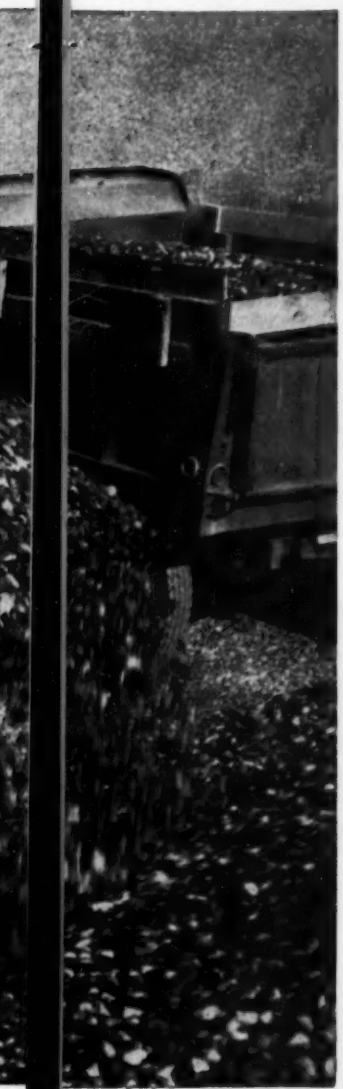


2. Terrific Break-Out Power
Get the bucket-blade into hard-to-dig material, or under a heavy obstacle, and loosen it by "working the bucket" —the two double-acting hydraulic cylinders are actually powerful enough to pull the back wheels off the ground.



3. Low Level Bucket Action
At a height of only 3 feet, you can tip the bucket back with a full load. Low-level bucket action is independent of boom hoist. You can travel a full load at low-level—with excellent visibility and stability, and you *won't* spill the load.

pays for this machine fast!



Capacity is strictly a matter of how much you can pick up in the bucket — NOT how much is printed on a specification sheet.

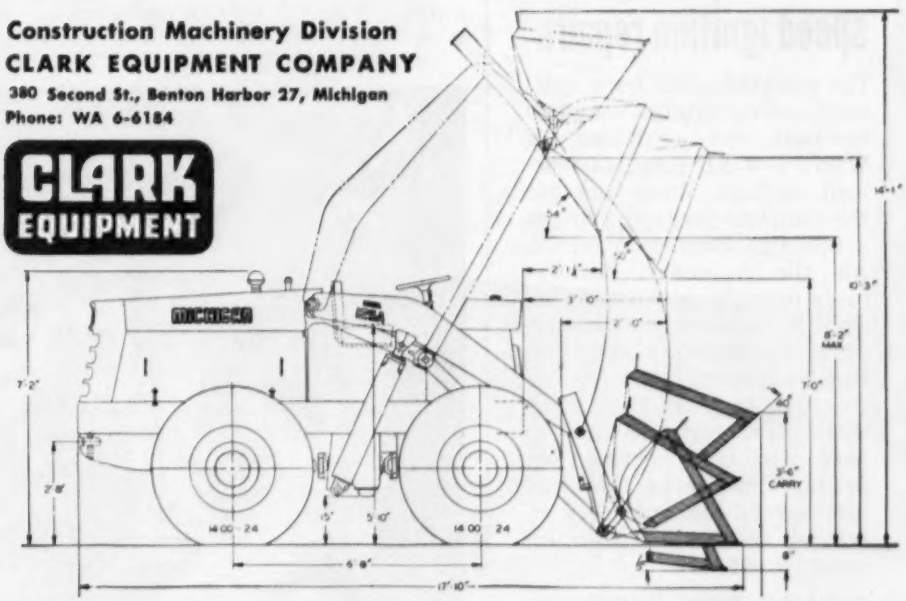
Take a close look at the bucket in the photograph. It shows a typical MICHIGAN® bucket load, heaped-up well over the 1⅝ yard *rated capacity* of this Model 125A. There's at least a 50% bonus in the bucket—and that's a major reason why a MICHIGAN pays for itself fast.

You simply move more with a MICHIGAN! For example, on a 10-hour shift, at a rate of 40 loads per hour, that 50% bonus can add up to *325 extra yards per day!* How long do you think it will take this kind of bonus yardage to pay for a MICHIGAN? We guarantee it won't take long.

Two outstanding features combine to give you bonus yardage on a MICHIGAN. The Clark-built power train, with torque converter and power-shift transmission, gives you more cycles per hour; MICHIGAN bucket action puts more material in each bucket load. For a demonstration, on your own job, if you wish, call your local MICHIGAN distributor, or write or call us direct. And ask for details on the low cost MICHIGAN Lease Plan.

Construction Machinery Division
CLARK EQUIPMENT COMPANY
380 Second St., Benton Harbor 27, Michigan
Phone: WA 6-6184

CLARK EQUIPMENT



Multi-position Bucket Action: note the shaded area of this Model 125A range chart. From 8 inches below ground-level, two big double-acting bucket cylinders pull the bucket back to a 40-degree carrying position at a height of only 3½ feet. The operator has precision control over this independent bucket action.

Bucket



4. Full Power at the Bucket

Step on the brake and automatically put the transmission in neutral—the full hydraulic power goes into the bucket cylinders. Accelerate for faster bucket action and this automatic neutral takes the load off the brakes and torque converter.



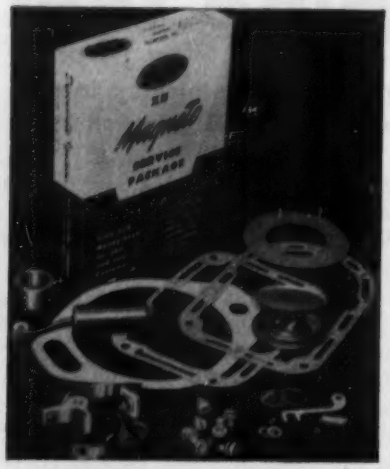
5. Look—No Clutch!

Watch the driver *change direction while moving*—by flipping the easy hand-lever on the steering column. There's no clutch pedal on a MICHIGAN—the torque converter and power-shift transmission takes all the work out of gear-shifting.



6. Easy to Drive

Operate the boom and bucket controls with the right hand and spin the steering wheel effortlessly with the left—hydraulic power does the muscle work.



new WICO magneto overhaul packages speed ignition repairs

The essential parts for a thorough, long-lasting magneto overhaul are contained in Wico's new XH magneto overhaul package. When you use the complete package, you get a thorough magneto overhaul. All the necessary, factory-made parts for each repair are right at hand—in one package, under one number, at one price. Besides insuring better repairs, the package saves time spent looking for parts, looking up part numbers, figuring out prices. Time saved this way means your engine is back on the job fast, repair costs are lower, profits are up.

CONSTRUCTION EQUIPMENT ignition repairs last longer when a Wico XH magneto overhaul package is used. Package contains all necessary XH magneto parts for thorough, long-lasting repairs: condenser and contact set, gaskets, screws, breaker arm lock, oil seal, slinger, bushing.
ORDER PKG. NO. K-9358.

WICO

WICO ELECTRIC

Box 535 West Springfield, Mass.

Gentlemen:
I can use XH Magneto Overhaul Package No. K9358. Rush me name of distributor nearest me.

NAME .....
COMPANY .....
ADDRESS .....



FINEGRADER GETS CLEANED THOROUGHLY before it is rolled inside shop for overall inspection and renewal of worn parts. Concrete pad eliminates mud.



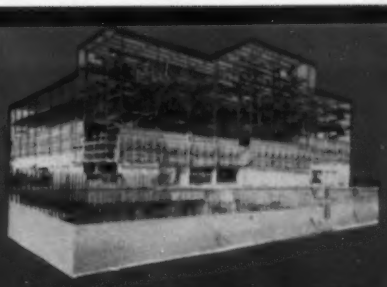
REFACING ENGINE VALVES for one of the company's trucks. Shop crew does all maintenance on trucks since special building is available, and expenses have been cut 50%.

Sunflower Division, operating out of Pauline, Kan., a Topeka suburb. President George C. Koss (also president-elect of Associated General Contractors) has a reputation for excellent employee relations. Many of his people have been with the company 20 yr, and more.

The winter headquarters idea was born out of perennial troubles besetting maintenance work at temporary winter bases set up on or near a job site. Here is an example: In the winter of 1948, the Sunflower Division set up for the winter at Minneapolis, Kan. After establishing a temporary service building, snow came, and 5-ft drifts blocked the building. A bulldozer cleared snow away, but then came the thaw and left the area in deep mud. A month of vital maintenance time was lost that year.

The permanent winter head-

big savings of time and money!



May Co. Department Store, North Hollywood, California. Albert C. Martin, Architect. T-S Construction Engineers, Inc., General Contractors.

on another job with *Whiteman* equipment



At least 20 hand buggies and 20 men would be required to haul and pour the concrete being handled by 4 Whiteman Power Buggies on the May Co. job. They're gluttons for work. Never get tired or slow down.

T-S CONSTRUCTION ENGINEERS, INC.
400 ST. PAUL AVENUE
LOS ANGELES 17, CALIFORNIA

PAUL B. TICHENOR, PRESIDENT
MERLE F. SMITH, VICE PRES. & TREASURER
PETER STERLING, SECRETARY
MADISON 9-1121

February 14, 1955

Whiteman Manufacturing Company
3249 Casitas Avenue
Los Angeles 39, California

Gentlemen:

You will be interested in knowing how Whiteman Power Buggies have speeded up the May Company job and effected a very substantial saving in labor costs.

We have handled as much as 375 yards in 5 hours with 4 Buggies, on upper floors, with hauls averaging 225 feet. We don't know what we would have done without them.

Yours very truly,

T-S Construction Engineers, Inc.

Paul B. Tichenor

Paul B. Tichenor
President







WHITEMAN VIBRATORS are efficient, rugged, dependable. Three models, gas and electric, are "tailored to the job." Complete line of vibrator accessories.

WHITEMAN SCREEDING MACHINES do a better job in far less time. Screed to a perfect level. Save labor. Easily portable. Width adjustable from 3 ft. to 20 ft.

WHITEMAN FLOATING-FINISHING MACHINES produce a smooth, perfect slab. Job-proved for 17 years. Four models — one for any job requirement.

Whiteman

THE LEADER IN CONCRETE EQUIPMENT

SEND NOW!

Whiteman Manufacturing Co.
3249 Casitas Ave., Dept. C
Los Angeles 39, Calif.

Please send prices, literature and name of distributor for ☐ Vibrators, ☐ Screeding Machines, ☐ Power Buggies, ☐ Floating-Finishing Machines.

Name _____

Firm _____

Address _____

City _____ Zone ____ State _____



NEW BUSHINGS for front axle spindle of Caterpillar DW10 go in much easier inside a warm and dry repair shop with tools at the mechanics' elbows. All the division's earthmoving and grading equipment is maintained here. Cranes are brought inside for major overhaul.



CHECKING ANTI-FREEZE is the first operation or powered equipment in the winter yard. Koss takes good care of machines.

quarters is a 17-acre yard, paved where necessary, and features five steel prefabricated maintenance buildings, each devoted to a particular type of operation. Work goes on inside efficiently under comfortable conditions every day, and much better equipment is turned out. Key employees wear forest green uniforms, sporting one red star on a sleeve for each 5 yr of service. Many have made their homes permanently around Topeka since a permanent winter base was established there.

All of the division's earthmoving and paving equipment is maintained here. Even the big cranes are brought inside when a major overhaul is needed. All machines are steam-cleaned before repairs are begun.

Truck maintenance expenses have been cut at least 50%, say Koss superintendents, because company mechanics now can do the work inside their own truck shop.

Repairs formerly done in the field in the mud and the cold were



Small Crew Installs Guardrail *FAST*

Contractors find Armco FLEX-BEAM Guardrail* easy to install even with a three-man crew. All you need are rail sections, posts and bolts. No springs, deadmen or castings are required. Curves are as easy to install as straight runs because there is no stretching and posts stay in perfect alignment. Individual sections can be pre-curved to a minimum radius of 20 feet.

Armco FLEX-BEAM Guardrail works well with practically any type of post. It can be installed on wood, concrete or metal posts of any shape.

It is widely used along the nation's most important highways, expressways and toll roads. You'll also find it economical and efficient for secondary roads, dead-end street protection, municipal or industrial parking lots. FLEX-BEAM Bridge Rail provides all the features of highway guardrail plus many special advantages.

CONSTRUCTION SERVICE. Contractors primarily interested in other phases of construction jobs often find that guardrail is part of the contract. Armco Construction Department can handle the guardrail part of the work and give you the protection of a fixed bid.

Write for data on FLEX-BEAM Guardrail, Bridge Rail, or Construction Service. Armco Drainage & Metal Products, Inc., 4715 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

*Armco FLEX-BEAM Guardrail is a deeply corrugated, beam-type rail supplied in 10- or 12-gage steel. For mounting on posts on 12'-6" centers. Spliced by seven bolts. Flare-back end wing. Painted after installation.

STEP 1: Two men place concrete post. The holes were dug by hand because of excessive rock.



STEP 2: Men lift an Armco FLEX-BEAM section to be fastened loosely to posts by long center bolts.



STEP 3: Crew plumbs posts and levels the Armco Guardrail in preparation for tamping earth around posts.



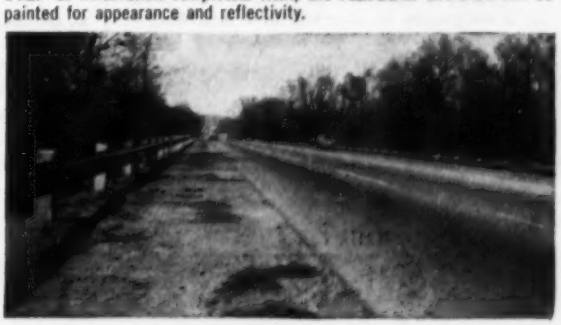
ARMCO®

ARMCO FLEX-BEAM GUARDRAIL

STEP 4: Tamping earth around post. Bolts will be placed and tightened in splice at left as work progresses.



STEP 5: Installation completed. Next, the FLEX-BEAM Guardrail will be painted for appearance and reflectivity.



it's what's inside that counts



THE EFFICIENCY OF Luber-finer PATENTED PROCESS PACK HAS NEVER BEEN EQUALLED!

DON'T BE MISLED BY PRICE ALONE!

There is NO substitute for DIESELPAK'S Patented Filtering Process for Heavy Duty Compounded oils AT ANY PRICE. The DIESELPAK cleans more oil faster—keeps it CLEAN longer—and gives more service and better engineered protection than any other filtering element. It PAYS to get the BEST!

STANDARD OF THE INDUSTRY SINCE 1936

√ PROTECTS ENGINE
The DIESELPAK is designed to remove not only ABRASIVES but also CONTAMINANTS such as moisture, carbon, acid, etc., from oil, and is engineered to keep the filtering media and the removed contaminants from migrating back into engine.

√ EXTENDS PERIODS BETWEEN DRAINS
The DIESELPAK collects and holds even the most finely dispersed contaminants without affecting or removing compound additives from the oil. A glance at the dip stick will show that the oil is CLEANER—symbol of better lubrication and longer oil life enjoyed only by Luber-finer users.

√ TAKES LESS OIL
The DIESELPAK because of its engineered construction requires 2 to 4 quarts less oil than spongy substitute filter elements being offered for use in the Luber-finer housing. This is an additional saving enjoyed when using the DIESELPAK.

LUBER-FINER PACKS AVAILABLE:

1. ***REFINING PACK***—Introduced to the public in 1935 for use with straight mineral oils, fuel oils, hydraulic oils, and inhibited industrial oils.

2. ***DIESELPAK***—First made available in 1941, the DIESELPAK was primarily designed for use with H. D. detergent compounded oils and has also achieved outstanding results when used with fuel oils and straight mineral oils.

WRITE FOR COMPLETE INFORMATION TO DEPT. 77

LUBER-FINER, INC., 2514 S. Grand Ave., Los Angeles 7



PAINT SHOP is on itinerary of all equipment during winter months. Everything gets coat of red, plus some gold Koss emblems.

necessarily hasty and somewhat makeshift, with work like valve grinding farmed out. Now the truck shop crew performs all the maintenance work on 12 dump trucks, 8 water-tank trucks, 4 flat-bed service trucks and 8 foremen's pick-up trucks.

One of the big items in the winter quarters setup is the paint shop. All equipment is sent through this shop, after mechanical work is completed, for a new paint job. Painting machinery on the job always was a somewhat spasmodic and heartless task at best, but since moving into winter quarters it is possible to paint the whole outfit every year. All equipment is painted bright red, gets gold emblems, and is kept as shiny as a circus wagon.

Safe, too

John B. Beuerlein, general superintendent of the Sunflower Division, is justly proud of the safety record of the company since the winter quarter's plan was started. A green-and-white safety flag flies from a flagpole near the main gate and is half-masted whenever there is a lost-time accident. There have been no lost-time accidents during the overhaul period since the company started winter quarters and in 1954 John proudly carried home the first-place plaque for safety from the Kansas Construction Association Convention in Kansas City.



The Barber-Greene is easily adjusted to increase or decrease its normal laying width of 10 feet. Dual controls. Heated screed. Large receiving hopper. Complete thickness control of over-all width, center, or either side.

PAVE

PAVE profitably. **PAVE** with any mix, hot or cold.

PAVE with the tamper that compacts to uniform density.

PAVE with automatic leveling. **PAVE** with positive traction.

PAVE with permanent bond between strips.

Let us show you how the Barber-Greene Finisher can reduce your costs.

54-38F

Barber-Greene

AURORA, ILLINOIS, U.S.A.

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cost studies . . . nearby job inspection . . . plant layouts

Two Ways You Can Improve Your LeTourneau



LETOURNEAU SUPER C equipped with Hydra-Steer provides positive hydraulic steering at all times. Maximum traction is afforded because wheel slippage cannot cause machine to turn or jackknife. The kit can be field-installed in 24 man-hr.

The Shepherd Way . . .

NEW DEVELOPMENTS that add to the efficiency of older earthmoving machines are more than welcomed by contractors. When such a development originates from a dealer who handles a competitive line of new equipment, that is really news. But that is what happened when Shepherd Tractor & Equipment Company of Los Angeles, Calif., developed a Hydra-Steer unit designed to help them sell used LeTourneau Super C Tournapulls.

Shepherd had the problem of reselling Super C's taken in trade on new equipment, because most contractors were familiar with the reputation of the C for temperamental steering, wandering, and lack of traction and control in adverse conditions. They knew if these conditions could be overcome, the equipment could be sold to smaller contractors. The main purpose was to equip the Super C with a hydraulic steering control so a kit, called the Shepherd Hydra-Steer Kit, was developed and tested and is now being offered for field conversion for $1,270 fob Los Angeles, Calif. Regular contractor's maintenance tools and welding equipment are all that are necessary for installation, which can be completed in 24 man-hours. The kit weighs 970 lb and comes complete with all parts necessary for installation, with instructions, measurements and diagrams.



INSTALLATION OF SHEPHERD HYDRA-STEER can be made without uncoupling tractor from scraper. Two men can make the conversion with tools and welding equipment.

Hydraulic steering is accomplished by a heavy-duty cylinder mounted between the scraper and tractor on each side of the draft yoke. Self-alignment of the cylinders is obtained by ball joints and replaceable bronze collars. Strong anchor points are provided by a heavy capped brace welded across the scraper yoke and heavy prefabricated steel anchor braces which bolt securely to the top rear corners of the tractor final-drive case. Mounted in this manner, the cylinders are in a half-extended position when the tractor and scraper are positioned for straight ahead travel. Turning of the tractor in relation to the scraper will cause one piston to move in and the other piston to move out the corresponding amount. Special control valves and interconnected hydraulic lines allow this turning motion to take place only when the operation controls are actuated. Hydraulic circuit design will not permit a reverse flow so there is never a reversal of control effect, as is normally ex-

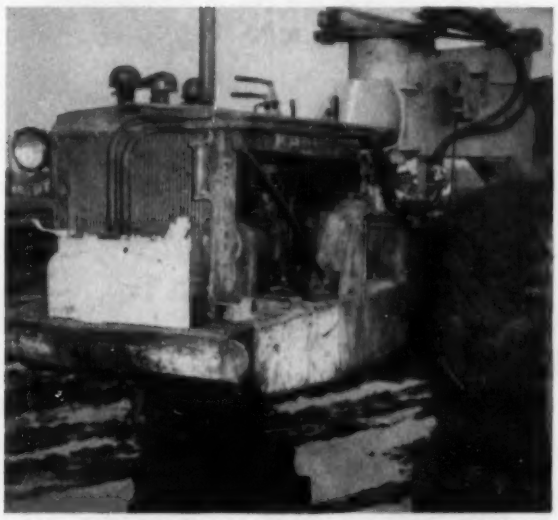
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Super C's to Get More Production

By RALPH H. LEWIS, Associate Editor



CONTRACTOR M. VANDER HEYDEN, Dyer, Ind., designed his own hydraulic steering unit and now gets 50% more production.



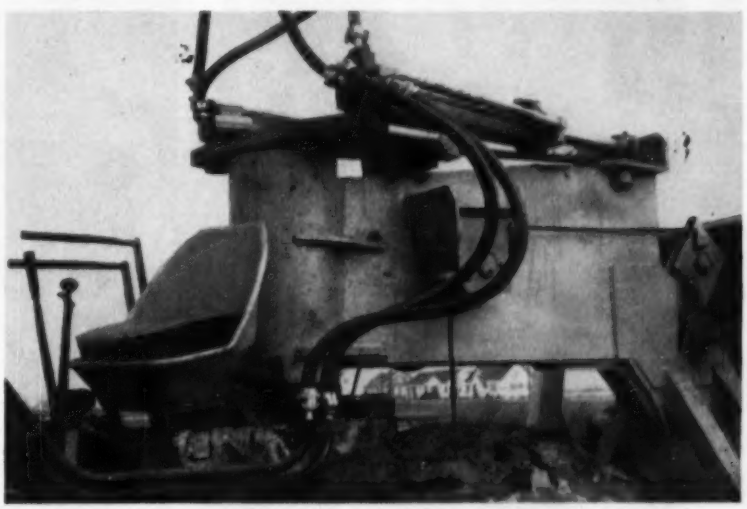
VANDER HEYDEN'S UNIT uses a Caterpillar No. 44 hydraulic pump which is mounted on front of tractor directly in front of radiator.

The Dyer Way . . .

DYER CONSTRUCTION COMPANY, Dyer, Ind., owns and operates 17 LeTourneau Super C Tournapulls, all equipped with a highly successful hydraulic steering unit that owner Mike Vander Heyden designed and built, using parts from other make tractors, a truck and locomotive axles. The converted units produce 50% more, have easy, positive and safe steering, and no steering clutches to maintain or wear out.

Mike Vander Heyden's ideas have proved so efficient with the old Super C's that other contractors are besieging him with requests for permission to use some of them. Presently, Mike will furnish working blueprints and a few parts on a licensing arrangement.

The conversion uses a hydraulic pump mounted on the front end of the tractor directly ahead of the radiator. The radiator is raised 2 in. to provide clearance for the pump drive and a new fabricated bottom tank. Two Caterpillar No. 6 bulldozer jacks are also used on top of the re-fabricated kingpin and yoke to provide the positive steering. The kingpin is made up of a fabricated yoke using a discarded locomotive axle. Expensive maintenance on steering clutches is completely eliminated by substituting a truck differential.



STEERING CYLINDERS are standard Caterpillar No. 6 bulldozer jacks. Kingpin is a locomotive axle fitted into steel tube. The unit uses shorter axles, but original tractor brakes.

The redesigned unit will make a 70-deg. turn either way. According to Chester J. Szrom, and George Hearne, master mechanics for Dyer, here are some of the steps involved in making the conversion on the Super C:

The unit is completely stripped down similar to a complete overhaul.

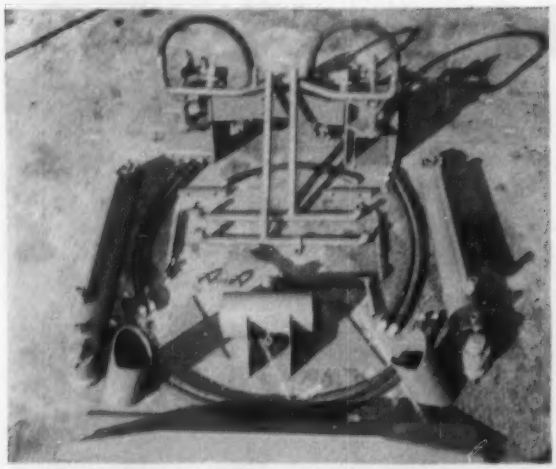
The tractor driving pinions are sent to a machine shop to be refaced and drilled to accommodate driving disks or couplings.

Then a new carrier bearing housing is welded into proper position. The rear transmission bearing housing is bored for a larger bearing so that the pinion will be supported by the bearing, eliminating objectionable "slop" or play on the pinion.

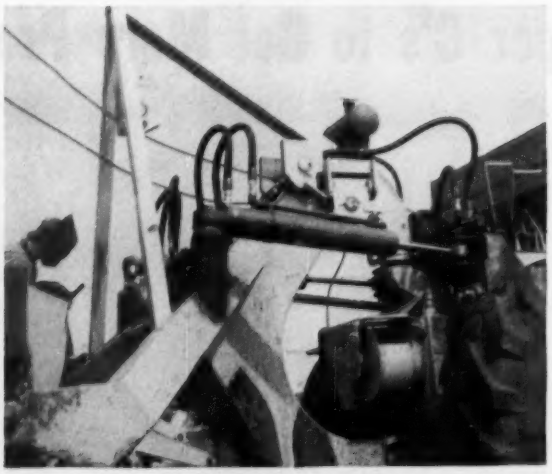
The bearing bracket is next machined to handle the larger bearing that bolts on transmission mounting studs.

A Mack truck CR-76 differential is then built up on one end by welding so that it will handle the

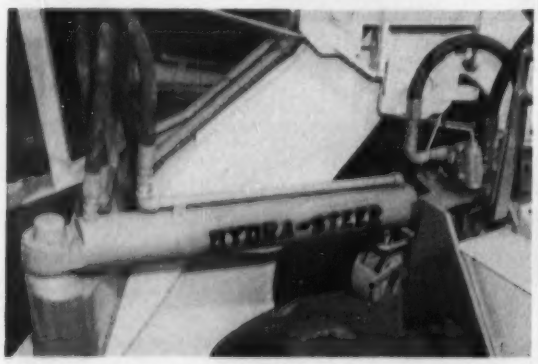
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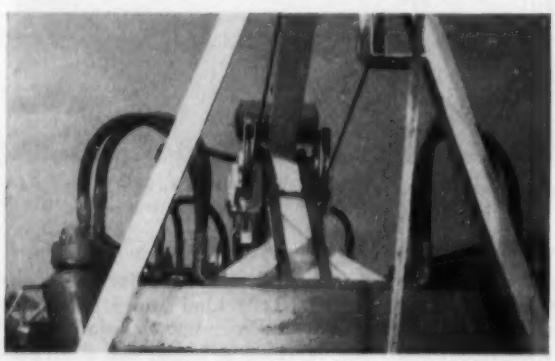
HYDRA-STEER COMES SHIPPED in kit form at a cost of $1,270 fob Los Angeles, Calif. Installation instructions and diagrams are included with each kit. Weight of the kit is 970 lb.



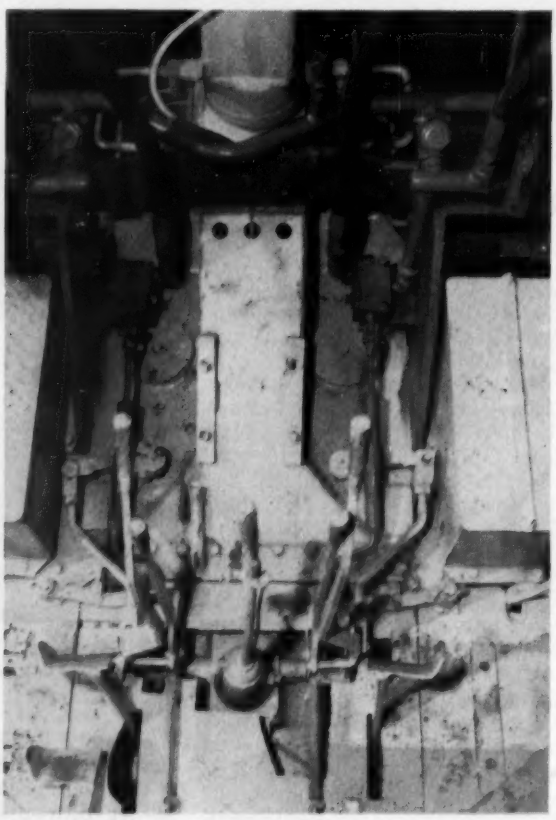
ADDITION OF HYDRA-STEER ATTACHMENT adds strength to the scraper beam. The hydraulic cylinder joints are ball-and-socket for self-alignment, with replaceable bronze collars.



CONTROL PISTON in closed position permits Super C to make turns as short as scraper yoke and tractor tire will allow.



TWO HYDRAULIC CIRCUITS hold the tractor and scraper in alignment and are connected across the anchor brace on the scraper.



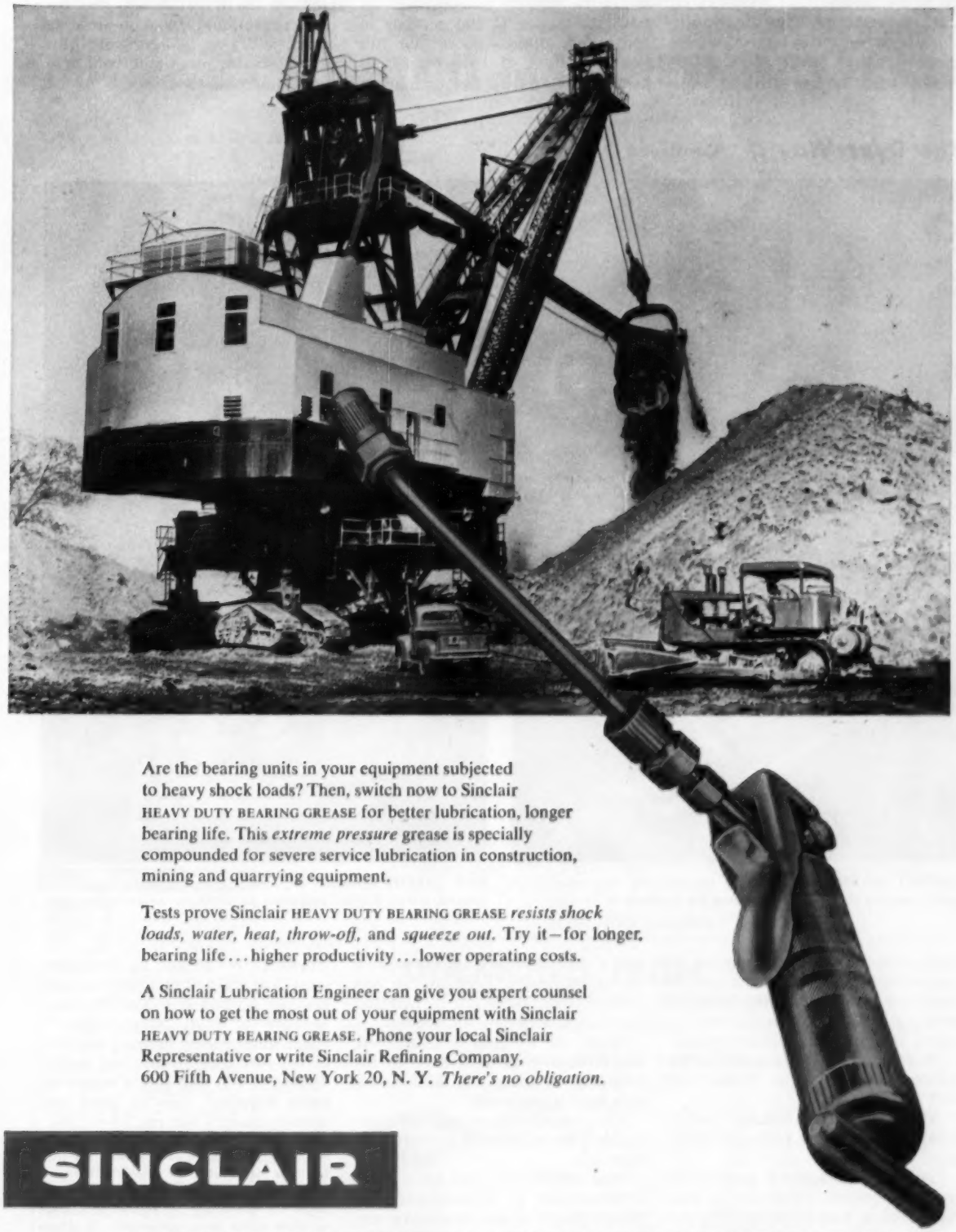
CONTROL LINKAGE connects with regular operating levers. No extra controls or hydraulic pump are required for the Hydra-Steer.

perienced with the Super C's when traveling loaded downhill, or being pushed.

The mono-directional hydraulic systems serve as positive hydraulic blocks between the tractor and scraper at all times. No hydraulic pump is necessary, and pressure is not maintained in the lines. A 2-gal surge tank handles fluctuations in liquid level and keeps the hydraulic system full. Pressure relief valves incorporated in the hydraulic circuit prevent damage to the hydraulic system which might result from rough operation.

Actual steering is accomplished in the usual manner. As the operator disengages one steering clutch, the hydraulic control valve on that side is opened, allowing fluid transfer between cylinders. The actual turning effort is made by the engaged driving wheel moving ahead

Resists Shock!



Are the bearing units in your equipment subjected to heavy shock loads? Then, switch now to Sinclair HEAVY DUTY BEARING GREASE for better lubrication, longer bearing life. This *extreme pressure* grease is specially compounded for severe service lubrication in construction, mining and quarrying equipment.

Tests prove Sinclair HEAVY DUTY BEARING GREASE *resists shock loads, water, heat, throw-off,* and *squeeze out.* Try it—for longer, bearing life... higher productivity... lower operating costs.

A Sinclair Lubrication Engineer can give you expert counsel on how to get the most out of your equipment with Sinclair HEAVY DUTY BEARING GREASE. Phone your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y. *There's no obligation.*

SINCLAIR

HEAVY DUTY BEARING GREASE

of the disengaged one and turning the tractor in relation to the scraper, at the same time changing the hydraulic ram positions. Release of the steering lever also instantly closes the hydraulic control valve and re-establishes the hydraulic block between the cylinders, which cannot change until the control levers are again operated.

No direct engine power is consumed by the Hydra-Steer mechanism, and all parts are well-sealed and long-wearing.

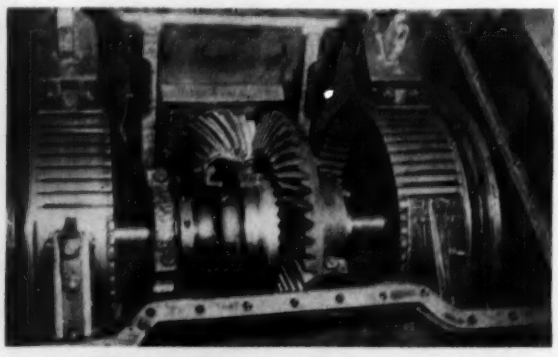
The Hydra-Steer with its locked hydraulic steering control will hold both the Super C and scraper in controlled alignment, so the full tractive effort of both wheels is combined to give greater power and production than possible with the older Super C's.

It is not necessary for the operator to manipulate tractor controls during loading operation. It's claimed the Hydra-Steer will reduce operational wear on steering clutches, brakes and controls, plus giving greater production and providing increased safety.

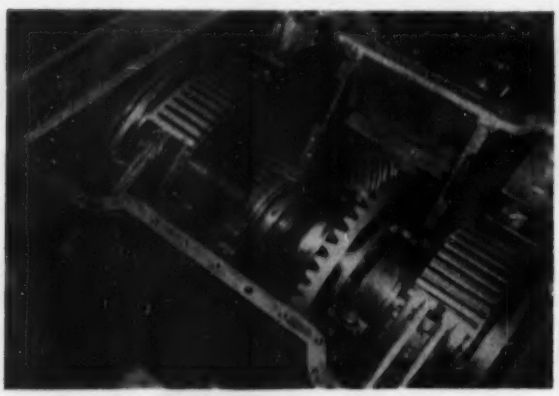
The Dyer Way . . . Continued



RADIATOR WAS RAISED 2 in. to give clearance for the pump drive. Radiator or pump can be removed without disturbing each other.



MACK TRUCK CR-76 differential is built up on one end to handle larger bearing. Over-size sleeve is installed on other end.



BIGGEST ADVANTAGE of Vander Heyden's rig is elimination of costly steering clutches. Changeovers are installed on 17 rigs.



NEW CARRIER-BEARING HOUSING is welded into place so that refaced pinion will be supported to eliminate objectionable play.

large bearing. On the other side, an over-size sleeve is installed to lengthen and handle the oversize bearing. Another reason for lengthening is to install an adjusting nut.

Shorter axles are placed on the power plant. Tractor brakes are left intact.

The deck is then refabricated to adapt it to the new yoke and kingpin.

The original Super C part of the yoke is burned away and a new box neck is fabricated on to yoke.

The kingpin is actually a scrapped locomotive axle that fits into a cast steel tube that is welded on to fabricated neck of the box construction. Balls are turned and fabricated together on bottom.

After the kingpin is assembled, the cross-arm is welded on to the kingpin. Bearings are 30% oversize for longer wear.

On ends of cross-arms, balls are welded for attaching steering cylinders.

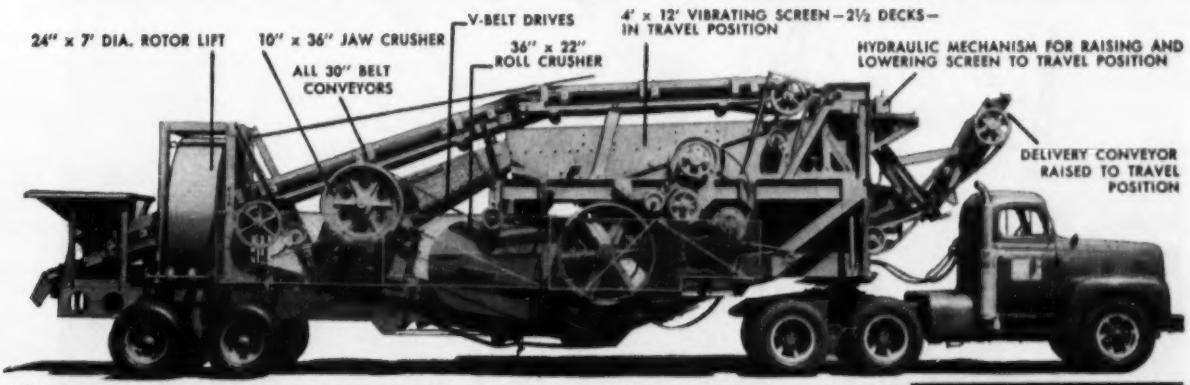
The converted units have given a minimum of maintenance for Dyer Construction Company and have certainly been good producers. According to Mike Vander Heyden, "We picked up these Super C's at a good low price—mainly because no one else wanted them, because of high maintenance. I spent some money figuring out how to convert these units, but once I figured it out and put a couple of them together, they've been real money-makers for me."

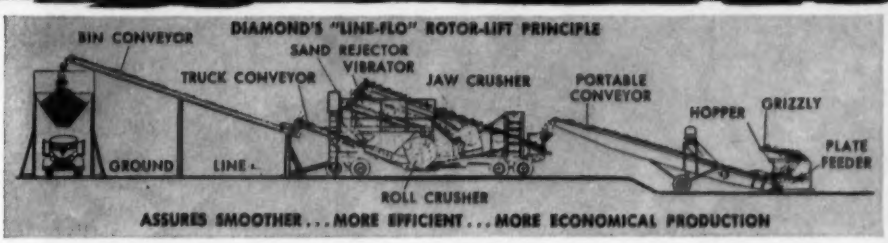
• During the process of obtaining the facts for these two articles, we were told that other contractors have worked out similar rigs with Super C's. We're sure our readers would like to know about these conversions, so if you have made some changes on the Super C drop us a line and tell us about it..—Ed

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DIAMOND "77" "All American"

Portable CRUSHING and SCREENING PLANT





Up to
450 tons per hour of ¾" aggregate

Not a guess, not an engineer's estimate nor an operator's dream — but actual reported on-the-job performance.

It puts you on the road to bigger profits

A 10"x36" jaw crusher, and a 36"x22" oversize star gear roll crusher, provide tremendous crushing capacity. The oversize 2½ deck screen (4' x 12'), set at an 18° angle assures the proper sizing of material for an uninterrupted flow through all decks.

And after a job has been completed in record time—as it will be—the screen deck can be lowered to travel position by means of a new hydraulically operated mechanism. Almost as soon, this easily portable and highly maneuverable DIAMOND 77 crushing and screening plant is ready to take off for its next profitable assignment. Find out all about the DIAMOND 77 "All American"—now!

SPECIFICATIONS

Overall Length	43'-5¾"
Overall Width	9'-2"
Overall Height (Operating)	15'-3¾"
Overall Height (Travel)	12'-6"
Travel Weight (Approx.)	64,000 Lbs.
H.P. Required (Sea Level)	130-160 H.P.
Wheelbase	20'-11" With Tandem Dolly
Number Of Front Wheels (Optional)	4 Dual Wheels—8-9x20—12 Ply Tires
Number Of Rear Wheels	4 Dual Wheels—8-9x20—12 Ply Tires
Jaw Crusher	10" x 36" (Roller Bearing)
Roll Crusher	36"x22" (Star Gear — Roller Bearing)
Vibrating Screen (Set at 18°)	4'x12'—2½ Deck
Rotor Lift Drum	24"x7' Dia.
Belt Conveyors	All 30" Wide
Screen Lowering Mechanism	Hydraulically Operated
Drives	V-Belt
Spline Shaft Drive From Power Unit at Side of Plant	
Capacity	175-225 Cu. Yds. Per Hr. (Based on 25% Oversize Material Passing 1" Screen)

OPTIONAL EQUIPMENT

1. Single or Double Axle Front Dolly
2. Sand Rejector
3. Chip Eliminator
4. Mechanical, Air, or Vacuum Brakes on Four Rear Wheels
5. Self-Contained Swivel Field Conveyor
6. Trap Loading Hopper with Plate Feeder and Grizzly

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CONCRETE MIXING AND PLACING



ON PROJECTS LIKE THE DALLES DAM, where mass concrete with lean cement ratios is required, mix control and design is of great importance to assure full coverage of the aggregate particles and to reduce objectionable hydration temperatures to a minimum.

11b. Design and Control of Concrete Mixes

by G. B. Southworth

Assistant General Sales Manager
The Master Builders Co.

IN THE EARLY 1900's when concrete was making great strides toward acceptance as a standard building material, a favorite slogan was "Concrete for Permanence." The owner whose structure needed maintenance sometimes wondered whether the term 'permanence' had been inspired more by wishful thinking than by experience. That the slogan was justified by concrete's potentials, even if not by some of its early performance records, was acknowledged, as was the fact that concrete gave then, as it does today, the greatest value per dollar of building cost.

Few basic rules were known or understood by the engineer and contractor of that era. One of the most fundamental, the Water Cement Ratio Law, was not proved and established as a guide until 1916 by Abrams, and probably not accepted by many before 1920. Today's engineer usually specifies the quality of his concrete by water-cement ratio, and today's contractor uses it as a prime factor in proportioning his mixes and in estimating his costs.

Early concrete handbooks considered sand and stone or gravel as inexpensive fillers, used to reduce the cost of a structure, as compared to one built entirely of cement and water. Now, the use of cement and water as a glue or paste is more clearly defined, and it is well known that, aside from the strength which is directly affected by the glue, the other qualities of concrete are at least as dependent on the soundness and gradation of the aggregates as on the volume of the paste used.

For example, no one would use a cement paint as a means of coloring a concrete floor or sidewalk with any expectation of long life, since the relatively poor wear resistance of such treatments is a matter of record. Yet, cement paints are essentially mixtures of cement and water in about the same proportion as exists in some concretes.

The American Concrete Institute states, in its Manual of Concrete Inspection, that the paste content of concrete is the source of volume

WHAT Users Say About Bucyrus-Eries and WHY

NEW MEXICO, CONSTRUCTION SUPERINTENDENT, steam generating plant: *"This machine (22-B Transit Crane) is handling approximately 600 tons of material on this job, including the setting of structural steel and machinery installations. The only repair we have had on this machine amounted to less than $10.00."*

TENNESSEE, OWNER-OPERATOR, excavating fuel tank pit: *"A power shovel operator most of my life, I know machines, and this Bucyrus-Erie 10-B dragshovel is just the kind of machine I've always wanted: easy to move from one job to another, fast to handle in operation, exceedingly powerful for its size, and relatively cheap to operate. Machine paid for itself in less than a year of operation."*

UTAH, OWNER, digging trench for water line: *"Pipeline contracting around Salt Lake City has grown exceptionally competitive but the rugged dependability of our 22-B dragshovel lets us get our share of the work."*

NEW MEXICO, JOB SUPERINTENDENT, setting structural steel: *"Have nothing but the highest praise for good control on your 22-B equipment. We made a difficult lens installation at an observatory last year, so ticklish that the job was insured for $250,000."*

OREGON, OWNER, constructing railroad shoofly track bed: *"We're exceptionally pleased with the ruggedness of our 38-B shovel. Despite heavy basalt rock excavation on this job, the machine has had no breakdowns."*

NEW JERSEY, OWNER, digging out lagoon: *"These 38-B machines are a big investment for me. I'm quite familiar with their ability to get the job done, and to stand up under tough working conditions. On this job, we're working in bay muck, and are exposed to salt air at all times. With no opportunity to clean up each night you can see what I mean when I say 'They have to be built right'."*

LOUISIANA, FOREMAN, dredging canal: *"Our 54-B dragline is operated 24 hours per day, handles 100 percent of the work, and we have had no downtime on this job."*

These are actual quotes* from users of Bucyrus-Erie excavators on various construction jobs throughout the country. In state after state, these experienced men say basically this: "We recognize the value of Bucyrus-Erie Individual Design . . . and we are convinced by the good, solid performance; sturdy, long-wearing construction; simple, easy operation; and on-the-job dependability of these machines."

Consider these quotes carefully. Then see your nearby distributor for the complete story on Bucyrus-Erie general purpose excavators. With excavators ranging from ⅜- to 4-cu. yd. capacity and cranes from 3- to 60-ton (nominal ratings), there's a size—and front end attachment—to fit all your construction needs.

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*Names will be supplied on request.

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FRANK BEACH, General Engineering Contractor of Concord, Calif. bought his first Cleveland in 1937. Since then he has bought 8 more Clevelands and has done over 500 trenching jobs of all kinds with them. Mr. Beach uses only one word to comment on the performance of his Clevelands—"Excellent."

Shown above is one of two Clevelands he used to cut 7,000 feet of trench, 2 feet wide by 4½ to 5½ feet deep, for the relocation of a 6-inch domestic water line for the city of Martinez, Calif. in the Pleasant Hill area of Contra Costa County, in rough-graded terrain and adobe soil.

The job called for some careful, accurate, stop-and-go digging alongside an existing 6-inch transite water line. In conditions like these, where a trencher must pick its way through numerous obstructions, Cleveland's famous multi-speed transmission, providing more than 30 *useful* digging speeds—always under finger tip control by the operator—was a big advantage.

Equally important for profitable trenching operations are the many other recognized advantages of Clevelands. Full-crawler maneuverability, compactness, versatility, dependability, fast, safe portability—these are just a few of the many reasons why Clevelands will give you the same excellent performance they have given Frank Beach for over 17 years. And they're . . . .

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CONCRETE . . . Continued

changes due to wetting and drying, and of the heat of hydration which produces undesirable temperature rise. It has also been identified as the portion of the concrete most subject to weathering action, except where unsound and inferior aggregates are used.

• **Low-unit water content** (water required per volume of concrete) is still another principle now used by the concrete engineer. As late as 1930, and even today in some circles, the thought persisted that the total volume of water was not especially important so long as the ratio of water to cement in the concrete was maintained. It is now recognized that excessively high cement factors used solely for the purpose of maintaining low water-cement ratios in very wet mixes serve only one function; that of providing paste of the strength specified. So far as heat evolution, shrinkage, and other qualities are concerned, these high-water, high-cement pastes are disadvantageous for most work.

To achieve low water contents, various adjustments or changes may be made by the engineer. One of the most desirable is the use of properly graded aggregates. Even gap-graded aggregate may have advantages, providing the combination to be used in the concrete has a minimum void content. The exception would be the use of fine inert fillers, which may reduce the total voids but, having no cementitious value of their own, require an increase in cement paste to coat their surface area.

Changes in gradation that result in lower void content and lower surface area of the aggregates will greatly enhance the quality of the concrete. In an earlier article, the use of the largest possible aggregate was recommended. This will reduce both void content and surface area of the combined aggregates.

Low-slump mixes consolidated by vibration is another method by which minimum water content can be obtained. Reduction in the sand-aggregate ratio also may be helpful within reasonable limits. However, when the sand is reduced below the proportion which provides a minimum of voids in the aggregate, it may be found that water requirements are increased in order to maintain a semblance of workability, and that flexural and tensile strength are adversely affected. *(Continued on page 120)*

take a look at a loader that "Measures Up" to your requirements

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TL-10 TRACTO LOADER

It's built as an industrial wheel loader from the ground up! Has years of HYDRAULIC TORQUE CONVERTER experience "under its bucket." Brings you the added advantages of a CLUTCH-TYPE TRANSMISSION which eliminates most gear shifting. Saves time maneuvering with short turning radius and bucket-over-drive-wheels design. Powered by the new Allis-Chalmers POWER-CRATER engine — high-octane performance on regular gasoline.

Has ¾-cu-yd bucket, 63-brake hp, weighs 11,400 lb! You get added versatility with interchangeable attachments — 1½-yd Light Materials Bucket, Lift Fork, Crane Hook, Backfiller Blade.

Ask your Allis-Chalmers Industrial Tractor Dealer for an on-the-job demonstration. Take a look at a loader that measures up to your requirements.



"MEASURES UP" GETTING LOAD because there is quick, positive crowding action — no slow, mushy starts. The Tractomotive Hydraulic Torque Converter Drive multiplies engine torque THREE TIMES . . . and there is the traction you need to take advantage of this extra torque with ample weight and big driving wheels. Result — heaping loads, fast!



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"MEASURES UP" DELIVERING LOAD There is fast getaway, fast delivery of load with the combined advantages of the Clutch-Type Transmission and Hydraulic Torque Converter Drive. A single lever controls backward and forward operation. Highest possible travel speed in selected gear range is automatically obtained through the torque converter. Result — shifting time saved, travel time gained, more trips made!



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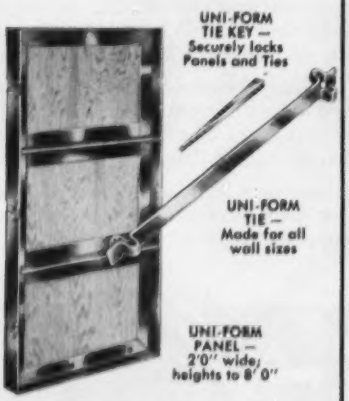
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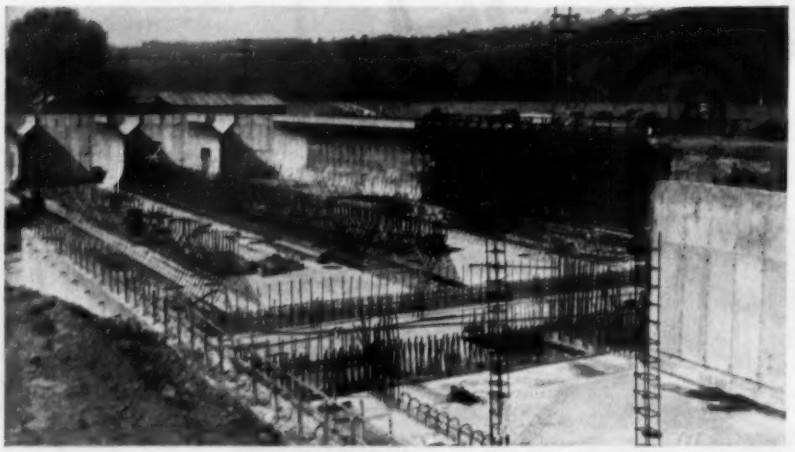
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Unique Prefab Form System Speeds Sewage Plant "Y" Wall Construction



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Developed by the Universal Form Clamp Co., Chicago, the new system is said to completely eliminate the many problems and difficulties encountered by contractors in forming this special type of wall in sewage disposal plant construction.

Specially designed trusses, which can be made to handle any type, height, shape or wall thickness, are used in conjunction with standard UNI-FORM Concrete Forms to form the "Y" wall. Assembly of the truss and UNI-FORM Panels into a complete form, ready to receive concrete is a fast, mechanical operation. Positive internal spreading and accurate wall thicknesses are assured by the use of Universal Spiroloc Cone Nut Assemblies.

Features incorporated in the design and operation of the Universal "Y" wall forming system eliminate the necessity of additional lumber or tying devices for the alignment and bracing of the unit.

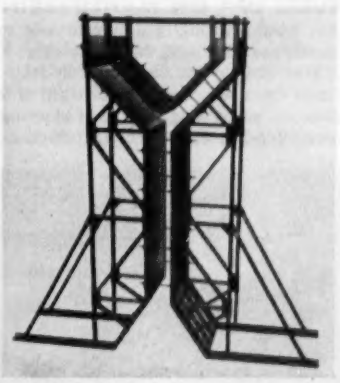


STRIPPED WALLS are clean and accurate

Erection, stripping and movement of the form can be handled either as individual pieces or as a large unit. Both methods have been very successfully used on recent projects.

Because standard UNI-FORM panels are used to form a large percentage of the "Y" wall contact area, it is possible to strip all UNI-FORM panels within a very short time after the actual pouring of concrete, leaving the trusses in place to provide the necessary support for the required period of time.

In this way, faster forming cycles, using minimum UNI-FORM equipment are possible, resulting in lower labor and material costs. UNI-FORM Panels are rented or sold, or rented with an option to purchase.

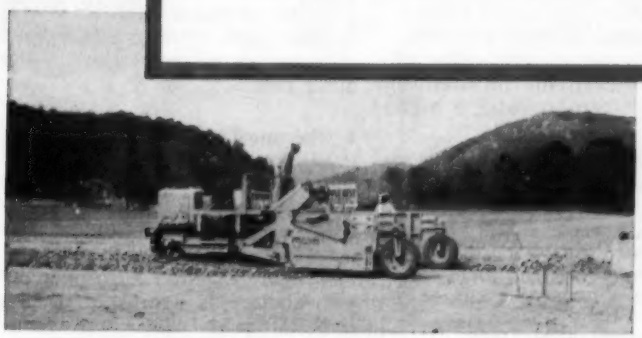


ASSEMBLED SECTION of "Y" wall truss with UNI-FORM Panels

For complete details on Universal "Y" wall forms and UNI-FORM Panels, Write:

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New Ford plant has paved area equal to 20-mile Asphalt highway



Spreading broken stone for the base course of pavement at new Ford assembly plant in Mahwah, N. J.



Applying hot Texaco Asphalt Cement under pressure to the broken stone base course.



Laying wearing surface of plant-mixed Texaco Asphaltic Concrete on asphalt-penetrated base.

The Ford Motor Company's new assembly plant at Mahwah, N. J., will supply the heavy demand for Fords in and around New York City. Everything about the plant is "king size", including the yardage of paving required for its parking areas and roads—sufficient to pave a highway 24 feet wide and 20 miles long.

On parking areas, Ford constructed a 6-inch stone base, penetrated with 1.6 gallons of hot Texaco Asphalt Cement per square yard, topped by a 1½-inch plant-mixed Texaco Asphaltic Concrete wearing surface.

On the plant's roads, the 6-inch stone base was penetrated with 1.75 gallons of asphalt per square yard topped by two layers of Texaco Asphaltic Concrete with a combined thickness of 2½ inches.

Choice of an asphalt base and asphalt surface gives Ford a completely *flexible* pavement, which maintains full contact with the supporting subgrade, despite any subsequent settlement of the latter. In terms of pavement performance, this flexibility results in the ability to withstand traffic impact years longer, plus a lower maintenance cost.

Whether your own paving problem involves a road, street, airport or parking area, look into the variety of solutions offered by Texaco Asphalt Cements, Cutback Asphalts and Slow-curing Asphaltic Oils. Helpful information on all types of asphalt construction is supplied in two free booklets, which our nearest office will be glad to send you.

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TEXACO ASPHALT

But, even with the most skillful use of coarse and fine aggregate, cement and water, and our greatly advanced techniques of placement, much room for improvement in the quality of concrete still exists.

• **The use of admixtures,** a practice that was once frowned upon by many concrete authorities, is responsible for considerable progress in the direction of getting the ideal concrete. This attitude has changed now, and the top authority, The American Concrete Institute, states today's position in its Committee 212 Report, "Admixtures for Concrete" in its Journal of October, 1954. Reprints may be obtained from the A.C.I., 18263 West McNichols Road, Detroit 19, Mich.

That there were doubts about admixtures for many years is not surprising. The realization that concrete was vulnerable led to experiments, often on the job, with materials which seemed to answer at least some of the problems. Without a proper understanding of concrete, or even the importance of the water-cement ratio, a high percentage of these early experiments were unsuccessful.

After some 30 yr of experience with admixtures, during which acceptance of proved materials grew steadily, the construction industry, in 1954, used admixtures of one type or another in more than 75% of the concrete placed in the United States and Canada. Selected for their specific functions, the admixtures provided qualities which, in most cases, could not have been obtained as economically by any other means.

• **The most commonly used admixtures** today are those employed to entrain air. While purposeful entrainment of air became established as a desirable component of concrete about 1940, air entrainment had existed in concrete many years before as a result of the use of certain materials. There is ample evidence that some natural cements used as an admixture with normal portland, or that cement-dispersing agents, which came into use in the early thirties, produced concrete of greater durability. Cements produced with certain grinding aids also proved to have better durability records.

Whether or not the cement producers and the manufacturers of the additives were aware that their materials entrained air, the fact remains that job records show concrete of lighter weight. In some instances, where unit weights were not checked, and as nothing was known about the importance of controlling air contents, high percentages of air resulted and the setting times, strengths and other qualities were effected adversely. Fortunately, the difficulties were of a minor nature and the advantages in terms of durability were so pronounced that further investigations were made, as a result of which today we know where and when to use entrained air; how to obtain it; and, more important, how to control it so that we procure its advantages and minimize or eliminate its disadvantages.

• **The theory that density** was an infallible index of quality was perhaps one of the chief reasons for the reluctance to admit that certain materials caused air-entrainment. There is general agreement today that density is still of paramount importance, but density is now considered to be a matter of impermeability rather than

(Continued on page 122)

"THAT'S REALLY THE WAY TO HANDLE CONCRETE"

says L. G. (Bud) Waigand, Project Manager, Peter Kiewit Sons Co.



Two men run this Noble batch plant with 2S5 Koehring mixer

How would you haul and place 16,000 yards of concrete on a big water reservoir job, with pours scattered all over . . . and with a tight schedule?

Peter Kiewit picked two 3-yard Dumpcretes, mounted on light, short-wheelbase Chevrolet trucks for their U. S. Bureau of Reclamation job near Salt Lake City.

"We liked the Dumpcretes because they're fast," says Mr. Waigand, "and because they place equally well into forms, buckets or collecting hoppers. They're rugged too, and cause little downtime."

For facts on 2, 3, and 4-yard Dumpcretes write today.



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☐ "12 Ways to Set Up for Central Mixing"

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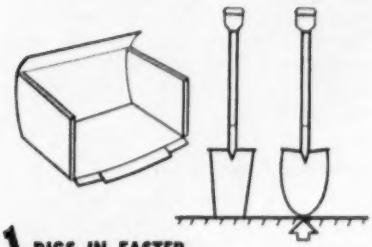
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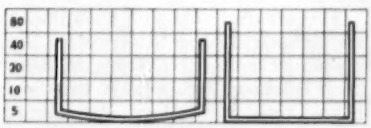
5 BIG REASONS WHY ALLIS-CHALMERS SCRAPERS move more dirt at lower cost

Check over these pull scraper features point by point. See for yourself how performance makes dollars when design makes sense.



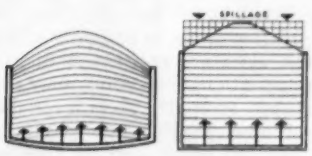
1 DIGS IN FASTER

The penetrating ability of a round-end spade helps illustrate how the curved and offset cutting edge on Allis-Chalmers scrapers concentrates all the tractor horsepower on the center section during initial penetration.



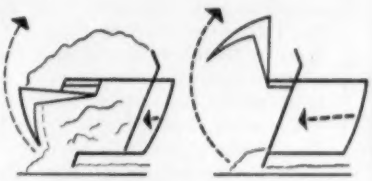
2 LESS LOADING RESISTANCE

Low, wide bowl plays an important part in ease of loading. Since loading resistance is largely determined by the height to which the load is built, the lower, wider bowl of an Allis-Chalmers scraper requires less time and power to get the same yardage as other scrapers.



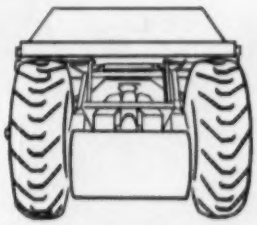
3 HEAPS AUTOMATICALLY

The combination of slightly deeper center cut and correctly angled cutting edge shapes the load as the scraper fills. The greater volume of dirt flowing into the center of the curved bowl "boils" forward, to the rear and to the sides, pulverizing the dirt, filling the voids and producing an automatically heaped load without excessive spillage.



4 POSITIVE EJECTION ASSURES EVEN SPREADING

With patented linkage, apron lifts, then moves forward and up as ejector pushes forward. High apron lift prevents any possibility of material's jamming. Anything that can be put into the bowl can be easily ejected.



5 HAULS, MANEUVERS EASILY

The extra wide, low bowl keeps center of gravity low, helps the scraper hug the ground for safety. Front running gear has ample clearance at all points. The two-to-three feet shorter wheel base permits easier maneuvering. Scraper can turn in its own length.



INTRODUCING THE AC-108 . . . newest scraper in the Allis-Chalmers line — shown here with an Allis-Chalmers HD-15 Tractor. Has 8.4 struck capacity (11 yd heaped). Incorporates all of the big-yardage features found in the other Allis-Chalmers scrapers, 2 to 18 yds heaped capacities.

ALLIS-CHALMERS
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

FAST, EASY WAY

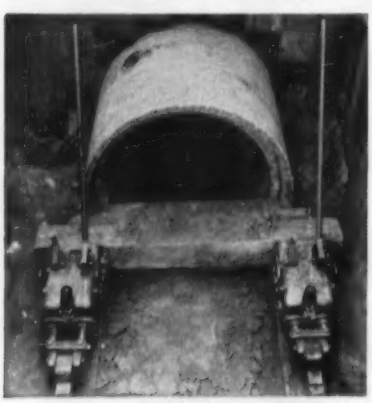
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simply a function of the weight of the concrete.

Occasionally, there may be concrete placed where weight is an important factor, but the engineer who specifies density is usually endeavoring to obtain concrete which will be resistant to the passage of water and to the effects of corrosive solutions, and which will withstand severe weathering. It is almost universally true that these objectives can be met more readily by concrete which weighs slightly less, due to air entrainment.

This seems to be somewhat of a paradox, but a knowledge of what the purposeful entrainment of air does in both the plastic and hardened states of concrete may help to clear up the apparent mystery.

Consider, first of all, the action that takes place in a non-air-entrained concrete mix. The aggregates are held in a more or less fluid medium. Since they are heavier than the fluid, they tend to settle and consolidate, coming into intimate contact with one another. In the process of settling—and this occurs even in fairly stiff mixes—they force the light ingredients in the concrete to the surface. These light materials are the water and the light weak fines, such as silt in the sand.

Channels Formed

At the point where maximum resistance to wear and weathering is needed, we have the highest water-cement ratio and the greatest concentration of any deleterious matter that may be present in the aggregates.

As the water moves to the surface, it creates connected channels and voids. These provide easy access for moisture later after the concrete has hardened and cured.

Furthermore, with the aggregate particles in intimate contact with each other, they have little opportunity to move with the cement paste as it sets, hardens and cures. There is a very definite tendency on the part of the cement paste to shrink as it dries out after the curing period, and if movement of the aggregate is restricted or prevented, some bond with the surface of the aggregate may be lost. When subjected to weathering, such as freezing moisture, this condition may result in pop-outs. There is no need to describe this condition which is a familiar sight in all our old highways and sidewalks.

• **In air-entrained concrete,** on the other hand, the minute bubbles of air which are dispersed uniformly throughout the mortar act much the same as water wings, buoying up the heavier pieces of aggregate. Since settlement of the heavier ingredients is reduced, bleeding of water and the light fines to the surface is held to a minimum. Some bleeding does occur, but the channels are fewer and, due to interference of the air bubbles, are disconnected.

So long as the air is entrained properly and the amount is controlled within optimum limits, the concrete surface which no longer consists of high water content and weak fines, will have greater resistance to both weathering and moderate wear. Scaling is noticeably reduced, particularly in heavily salted areas.

Bubbles Cushion

Because the connected channels and voids are far less frequent, impermeability and absorption of the hardened, cured concrete are improved. The penetration of moisture into the concrete in cold weather is retarded, and the force exerted by the moisture when it freezes is absorbed and cushioned by the small bubbles of air which are a permanent part of the concrete.

The air also acts as a cushion, in the plastic state, to prevent the pieces of aggregate from making close contact. As a result, they are more free to follow the slight movement of the cement paste as it shrinks. Bond between the paste and the aggregates, especially at the surface, is improved, and this, combined with the reduction in bleeding, provides surfaces with reduced scaling and fewer pop-outs.

Emphasis was given, in an earlier article, to the possible loss of strength in medium and rich mixes when ordinary foaming type air-entraining agents are employed. The contractor will be well advised, therefore, to be familiar with those agents which cause little or no strength loss, or which may even increase strength because of better-than-average water reductions or because of physical or chemical reactions with the cement, or both.

The average contractor may well be confused by the considerable list of admixtures offered as air-entraining agents. There are more than 20 different brands which have been examined and approved by federal and state authorities. They can be divided roughly into two

(Continued on page 124)



Just one pint may

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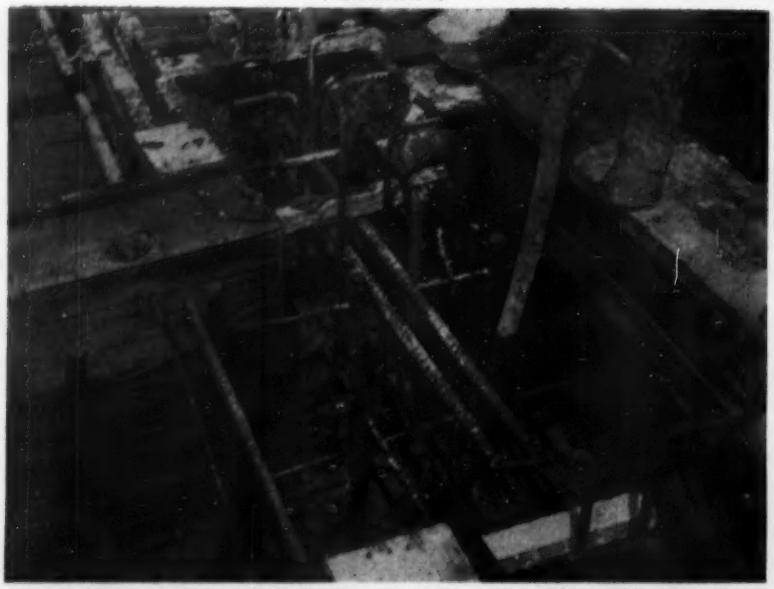
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(Advertisement)



PROPER VIBRATION AND GOOD FORMS used in this well-planned box girder intersection make it easy to produce the best possible concrete. Good vibration technique is simple with good equipment, and . . .

Vibration Know-How Produces Better Concrete the Easy Way

One of the many ways experienced concrete foremen get maximum benefit from vibration is by planning concrete placement so each new dump is backed into a previous dump. This results in a smooth surface (no rock pockets) with maximum bond and greater strength. In the above photo the workman has just finished vibrating a dump at the center of a box girder intersection. As each succeeding dump is placed he will vibrate from the center outward, working it into concrete previously placed in the side members.

Appearance of sheen on the surface of the concrete gives visual indication that vibration is complete. With the modern high frequency vibrators pioneered by VIBER this requires only about 10 to 30 seconds, depending on the characteristics of the concrete.

• **Vibrator Operators** soon develop a "feel" which tells them the exact condition of concrete during vibration without seeing it. An experienced operator depends on this "feel" and the sound of his vibrator more than on the appearance of the concrete to tell him when vibration is completed.

Experienced operators describe the feel of concrete when the vibrator is first inserted as "rough" and "rocky." In a matter of seconds it "smooths out" and becomes "creamy," at which point vibration is complete and the unit may be removed from the concrete.

• **Good Forming** and proper vibration are essential where finished appearance is important, as it was on this overpass built by Erickson, Phillips, and Weisberg as part of the East Bay Freeway in Oakland, California. Tight forms made of well-seasoned lumber adequately braced can take full advantage of vibration to produce smooth, rock pocket-free concrete. VIBER'S replaceable rubber tipped vibrators are specially designed to prevent any damage to such forms, which might cause blemishes on the finished concrete surface.

• **For further information** on VIBER'S complete line of internal and external vibrators, contact your authorized distributor or VIBER COMPANY, 726 South Flower Street, Burbank, Calif., Dept. 75

VIBER

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CONCRETE . . . **Continued from page 122**

groups, with several subdivisions in each group.

• **The first and most common group** of simple air-entraining agents consist mostly of soaps or detergents. The agents used to intergrind with cement fall in this class. Their major, and usually only, function is to entrain air in the concrete. While losses in strength of rich mixes are generally experienced, they improve workability and help to reduce water, both of which improve many qualities of the mix. In lean mixes, water reduction can be quite substantial and often is sufficient to counteract the effect of the air on strength.

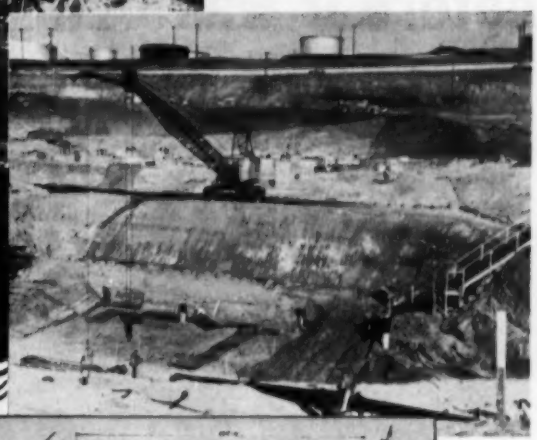
• **The second group** consists of products which have air entrainment as a secondary advantage. Their prime action may be that of plasticizing or water reduction, dispersion of cement, retardation of set, catalysis, or other physical and/or chemical action in the concrete. Some of the materials sold and used for these purposes do not entrain air. If not, their contribution to durability of the concrete is slight. In the second group, therefore, we should consider only those which do combine air entrainment with their other actions. These are the materials which may hold the greatest interest for the contractor required to meet specifications for both strength and air content. Many of them entrain air up to 6% and, because of their other properties, produce strengths that comply with the water-cement ratio law for non-air-entrained concrete. Obviously, this would mean air entrainment with increased strength rather than loss in strength for a given cement factor.

One of the widely used members of this group, and certainly the one with the longest field experience history and most extensive durability record, is a calcium salt of sulfonated lignin. Its use as a specified component of concrete predates simple air entrainment and the results obtained in laboratory freezing and thawing tests have been adequately confirmed by field jobs over nearly two decades.

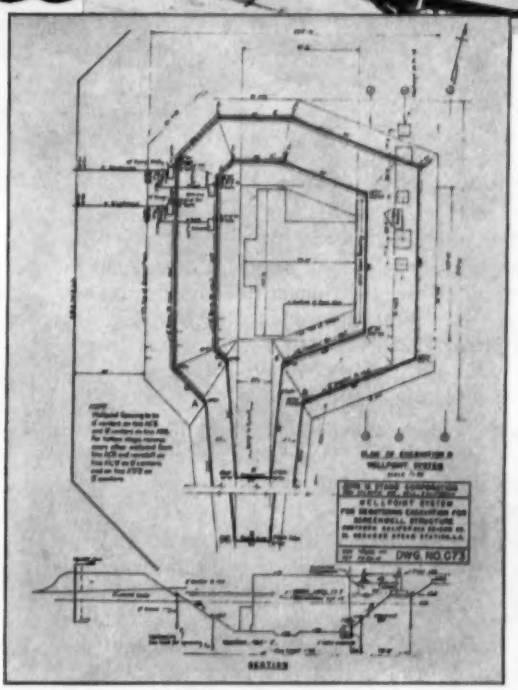
The Bureau of Public Roads conducted an exhaustive series of tests on air-entraining admixtures (reported in its Journal of February, 1954). Results produced data showing that salts of sulfonated lignin not only produced the most

(Continued on page 128)





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water under control!



STANG wellpoint job in beach sand... Down to 60 feet—30 feet below water level... *only 500 feet from ocean!*

Plans for an oceanside steamplant power station called for the construction of a reinforced concrete screenwell structure. Water and soil conditions were extremely adverse. The John W. Stang Corporation Engineering Service was called in. The resultant STANG plan (illustrated) *provided* completely dry excavation from the surface to a 60 foot depth ... *utilized* dry-land excavation equipment 30 feet below water level ... *made possible* the use of low-cost concrete forms. For fastest low-cost, construction when water is a problem ... call STANG!

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It was ready! Surveying results proved it—Polara's design assured it. For the starting point in its development was to retain as many of the features of Berger Engineers' Transits as possible, with appropriate modifications to combine rugged construction, ease of use, and light weight in an accurate, budget-priced, standard 5½" transit. Read the specifications of this unusual instrument. Then let us arrange for the nearest Berger dealer to put it through its paces for you.

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PARTIAL SPECIFICATIONS

Standards – Bronze "A" frame with bronze bearings.

Telescope – 10½ in., erecting internal focusing, one piece, cast bronze; 22-power; coated optics, 3 feet short focus. Stadia lines at fixed ratio 1:100.

Horizontal Circle – 5½ in., divided to ½ degrees, with double opposite verniers reading to 1 min.; graduations on corrosion resistant aluminum alloy.

Vertical Circle – Diam. 5 in., one double vernier reading to 1 min. Aluminum.

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Leveling Head – Cast bronze; nickel silver leveling screws fully enclosed, with replaceable bushings.

Mahogany Transit Case, sunshade, 8 oz. plumb bob, magnifier, spanner wrench, adjusting pin and screw driver.

Split leg tripod, straight-grained white ash; tripod head with 3½-8 thread.

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Berger 6¼" Engineers' Transit

first in engineering

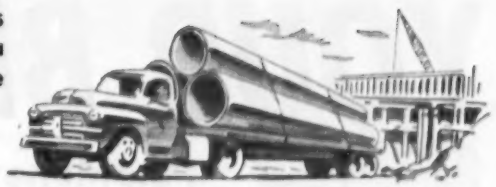
first with engineers

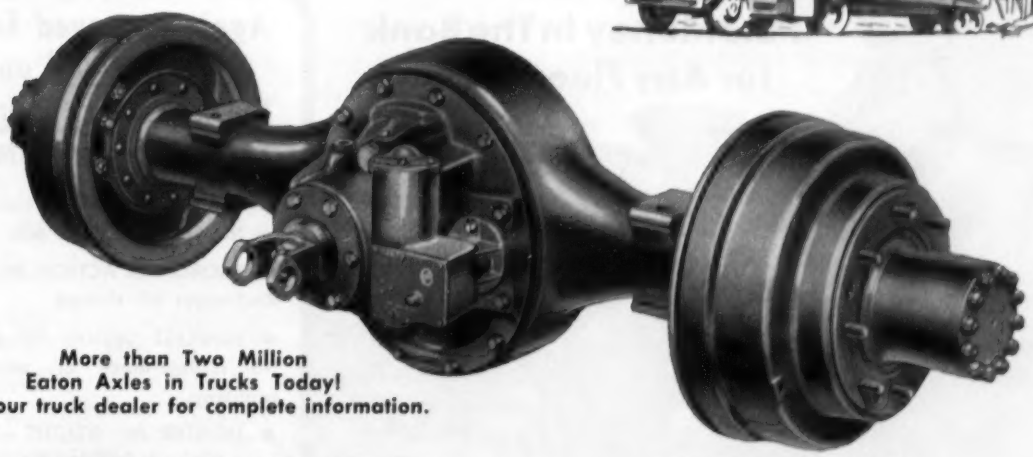
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CONCRETE . . . Continued from page 124

durable concrete, but also permitted the greatest reduction in unit water content and produced the highest compressive and flexural strengths of the more than 20 materials tested.

In addition to the admixtures which entrain air as a primary or secondary objective, there are many others which may be used to procure certain benefits. It would require many chapters to cover all of them. The main ones are accelerators, retarders, plasticizers, cementitious and pozzolanic materials, waterproofers, and materials used to inhibit alkali-aggregate expansion.

Accelerators

Calcium chloride is one of the safest and least expensive of the many known accelerators. It may be the essential, and sometimes the only, ingredient of trade name products sold for the express purpose of increasing early strengths and speeding the set of concrete. While calcium chloride may be helpful in cold weather construction, it should not be considered as a substitute for good construction practice such as protection of the concrete during sub-freezing temperatures.

While other accelerators are available, much more is known about the use and limitations of calcium chloride. Where acceleration only is required, it would seem to be the construction man's best bet. Name products containing calcium chloride and offered as accelerators should be evaluated on the basis of any other benefits they may have.

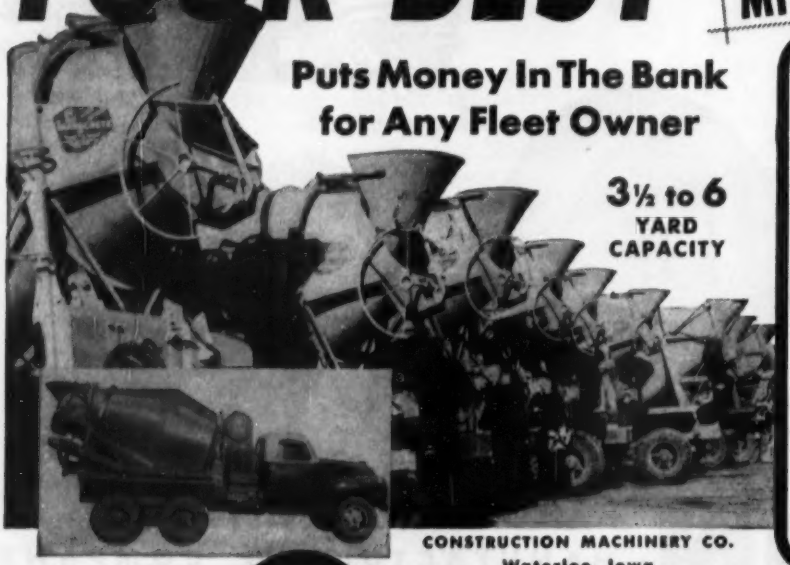
Retarders

In the last few years, considerable demand has been created for retarding agents. Part of this demand has been stimulated by a growing concern on the part of engineers with fast-setting concrete, particularly bridge decks or other concrete placed over cambered steel, and for prevention of cold joints in mass concrete and certain other types of placements. Another stimulus has been the difficulty experienced at times with 'green' or false-setting cement. Sugars, starches or cellulose materials, gypsum, and some organic acids and their salts are effective as retarders. The use of ordinary retarders, such as sugars and gypsum, requires careful inspection and control on the job to prevent serious damage to the concrete, such as prolonged delay of set or excessive expansion of the concrete.

Some retarding admixtures have been developed which contain carbohydrate derivatives and have been found quite satisfactory in controlling or slowing down the set of concrete. They are capable of moderate water reductions, an important benefit in itself. However, there is some evidence that they may tend to increase bleeding of the concrete which is often considered objectionable. As retarders, the carbohydrate derivatives are reasonably safe so long as they are used in accordance with the manufacturer's specifications.

One form of salts of sulfonated lignin has established an excellent record as a retarder, as well as in the control of the evolution of heat in mass concrete. Under most circumstances, the quantity required for almost exact control of setting time can be determined with a minimum of preliminary tests. The fact that it also entrains air in the concrete and provides a high degree of durability, and reduces

YOUR BEST TRUCK MIXER BUY



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TRANSCRETE

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Contractors demand equipment with a Fuller torque converter coupling



Two workhorses in construction equipped with Fuller Torque Converter Couplings: Hough Model HM PAYLOADER (above), Pettibone Mulliken SPEEDALL, Front End Loader (right).

The performance of Fuller Torque Converter Couplings has been instrumental in helping contractors win the battle of competition, meeting contract deadlines, and offsetting rising costs of operation.

Here's *why* contractors demand Fuller Torque Converter Couplings. Torque demand is matched to the load through 2.1:1 torque multiplication, and the converter automatically returns to smooth, economical fluid coupling operation as load demand drops. Operators can crowd the load at all times without engine lugging or stalling . . . getting faster work cycles, more production every shift. The fluid cushions out shock loads . . . saves engines, transmissions, drive lines, axles, brakes and tires . . . reduces maintenance expense.

If you are looking for equipment that offers *profit-plus performance* . . . look for equipment with a Fuller Torque Converter Coupling installed as the power transmission component. Write for descriptive folder.

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ELKHART 6, INDIANA

water requirements, increasing ultimate strength, gives the contractors assurance that there will be no detrimental effect from its use.

Plasticizers

Many of the materials already mentioned, air-entraining agents, some accelerators, and the retarders have a more or less plasticizing action in concrete. With slump or workability held constant, as compared to a plain mix, these materials permit reductions in water content of the mix. By the same token, they would permit placement of concrete in heavily reinforced or complicated form work without increasing the water content of the mix.

Finely divided materials, inert fillers, and cementitious and pozzolanic products might also serve as plasticizing agents in mixes which were deficient in fines. Many of these, however, would have no special benefit if the aggregates were properly graded, and may even increase the water demand in such cases.

Cementitious, Pozzolanic, and Inert Materials

In this group we find natural cements, slag cements, hydraulic lime, fly ash, volcanic ash, diatomaceous earth and many others Their presence in concrete otherwise lacking fines may be quite beneficial. On jobs where prolonged wet curing is possible, some of them may be used to distinct advantage as a replacement for part of the cement, thus reducing the heat of hydration. The cements and limes usually have service records which the contractor can use as a reference in determining their value. The others in this group may require investigation and specific testing under job conditions to establish their merit.

Waterproofers

All construction men know that there is no such thing as waterproof concrete. Agents sold for the purpose are advertised as 'reducing permeability' or 'reducing absorption.' From the earlier discussion, it will be apparent that any of the previous groups which reduce water, entrain air, or reduce the voids in the hardened concrete are more or less effective in reducing both absorption and permeability. The extent of their influence in that di-

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Disp. 524.9 cu. in., 6 cyls.



UD-14A, 76 hp. @ 1400 rpm
Disp. 460.7 cu. in., 4 cyls.



UD-350, 75 hp. @ 1800 rpm
Disp. 349.9 cu. in., 4 cyls.



UD-264, 55 hp. @ 1800 rpm
Disp. 263.9 cu. in., 4 cyls.

CARBURETED



U-1091, 200 hp. @ 1600 rpm
Disp. 1091.6 cu. in., 6 cyls.
(natural gas & LPG only)



U-450, 110 hp. @ 2200 rpm
Disp. 450.9 cu. in., 6 cyls.



U-406, 98 hp. @ 2200 rpm
Disp. 405.9 cu. in., 6 cyls.



U-372, 91.5 hp. @ 2200 rpm
Disp. 372 cu. in., 6 cyls.



U-282, 75.5 hp. @ 2400 rpm
Disp. 282.5 cu. in., 6 cyls.



U-240, 64 hp. @ 2400 rpm
Disp. 240.3 cu. in., 6 cyls.



U-220, 62 hp. @ 2400 rpm
Disp. 220.5 cu. in., 6 cyls.



U-9, 55 hp. @ 1500 rpm
Disp. 334.5 cu. in., 4 cyls.



U-264, 52 hp. @ 1600 rpm
Disp. 263.9 cu. in., 4 cyls.



U-164, 36.5 hp. @ 1800 rpm
Disp. 163.6 cu. in., 4 cyls.



U-2A, 24 hp. @ 1800 rpm
Disp. 113.1 cu. in., 4 cyls.



U-1, 16.5 hp. @ 2500 rpm
Disp. 59.5 cu. in., 4 cyls.

These are the 18 INTERNATIONAL Power Units that save dollars for contractors by bringing them a full measure of economical power all the time. Each unit is the result of more than 50 years of research, engineering, and manufacturing know-how. That's why INTERNATIONAL Power assures more production at lower cost for earthmovers.

Whether you specify power for new equipment—or repower a crane, a dragline, a crushing plant, or a shovel—or replace a small auxiliary engine—INTERNATIONAL Industrial Power can give you the right-size unit for the job.

You choose from 18 carbureted and diesel models, ranging from 16.5 to 200 net horsepower, each engineered to give you long years of higher production per horsepower and trouble-free operation.

If you've had experience with those tough INTERNATIONAL crawlers, you know how INTERNATIONAL engines stand up in rough going, cost less to operate. Leading equipment manufacturers power their products with INTERNATIONALS—the units designed to pay off on heavy-duty work.

Your nearby INTERNATIONAL Industrial Power Unit Distributor or Dealer is a good man to know. He'll help you choose the right INTERNATIONAL replacement engine to lick your power problems, and he'll back it up with factory-trained service and parts. See him today for the full story.

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INDUSTRIAL POWER
MAKES EVERY LOAD A PAYLOAD



FOR A MOBILE HOISTING RIG

ON MOST HEAVY CONSTRUCTION projects there are innumerable jobs of lifting or hoisting. Often it's imperative to get to the scene quickly. That's where a mobile tractor-mounted Carco winch pays off. For loading and unloading, lifting heavy machinery, pipe and fabricated steel, setting poles, and numerous other work, a Carco winch provides maneuverable lifting power. For a Carco winch, through its rugged, constant mesh gear train, efficiently takes the drawbar pull of the tractor and doubles it for hoisting or pulling. And the Carco winch line gives the added "reach" necessary to handle even an inaccessible load. See your nearest Carco dealer. PACIFIC CAR AND FOUNDRY COMPANY. Branches at Portland, Ore., and Franklin Park, Ill.



WINCHES
For All Industrial Tractors
CARCO®

rection can probably be related directly to their ability to reduce water and bleeding. Those with the lowest water requirements and with the lowest bleeding will produce concrete that is more nearly watertight.

Water repellents, such as fatty acids, are often used for this purpose. By coating the pores and capillaries of the concrete, they help to resist the ingress of water in walls above grade or in slabs laid on the ground. Their value in concrete below grade and subject to water pressure is questionable and, if sizable pressures are involved, they may actually be detrimental.

Below-grade concrete is waterproofed better and more economically by the use of water-reducing and air-entraining agents, and the best results above grade or on the ground are procured by combining these with one of the water repellents.

Alkali Aggregate Expansion

One of the greatest headaches to construction men in some parts of the United States has been the reaction between the alkalis in cement and certain aggregates, causing an expansion which results in cracking of the concrete and occasionally in what might be described as a blow-out rather than a pop-out. Unfortunately, research on the subject is not conclusive enough at this time to designate any specific materials as certain cures. However, it has been known for some time that the use of low-alkali cement was indicated, and there seems to be evidence that some pozzolanic materials are quite helpful in counteracting the reaction.

Special Concretes

Although the admixtures described assist the engineer and contractor in approaching the ideal concrete for many types of work, there are some special uses of concrete which require other properties than those normally obtained with these materials. As an example, concrete floors subject to heavy-duty wear require a quality that might be termed 'toughness' rather than hardness. Much depends on the type of traffic or usage of the floor. If abrasion and impact are involved, the hard, brittle concrete aggregates and cement paste that produce such excellent results elsewhere may prove to be a handicap.

For concrete floors, the use of any well-graded sound aggregate in the wearing surface is a good investment. Where poorly graded aggregates must be used in concrete for reasons of economy, a surface shake applied to the freshly floated concrete and consisting of properly sized aggregate with cement will result in a denser surface with a lower water-cement ratio.

However, it is unlikely that a wise contractor, installing a floor in a steel mill, for example, would use diamonds in the wearing surface, even if the cost were as low as sand. While the diamonds are exceedingly hard, they are also exceedingly brittle. And, as concrete aggregates approach the diamond in hardness, they also approach it in brittleness.

For areas subject to impact and abrasion, a softer but tougher material is desirable. Iron is one such material, and a number of commercial products are available which contain reasonably well-graded iron particles as the aggregate. In selecting the one to be employed, due consideration should be given to the gradation of the iron (for the densest surface, the grading should be similar to that of good concrete sand), the cleanliness and freedom from oil of the particles, freedom from any non-ferrous or reactive materials, such as aluminum or zinc which would be detrimental, and the presence of workability agents to aid in the incorporation of the shake in the concrete with low water content. As a general rule, air-entraining agents which produce workability by a soap or detergent action are completely unsatisfactory for this use.

Grouting Machinery and Bridge Plates

This is another unique application of concrete or mortar which has peculiar problems and which requires the use of special admixtures. Some advocate dry packing of grouts, but many installations have been made in that manner which upon later dismantling have shown only as little as 15% contact beween bed plate and grout. The use of flowable grouts has proved more satisfactory for two reasons: First, there is greater assurance of filling the grouting space; Second, there is a substantial savings in labor.

Flowable grouts are subject, however, to two types of shrinkage. There is the usual drying shrinkage which takes place in any portland cement concrete not kept wet. Of greater magnitude is the settle-





The MacClosky company is working on the interchange in the left center of the above picture. At right, MacClosky's crane with Yellow Strand Wire Rope, sets a concrete bucket into pouring position.

Freeway Interchange To Serve
11,000 VEHICLES AN HOUR!

CHARLES MacCLOSKY CO. SPEEDS LINK IN LOS ANGELES ROAD SYSTEM

In one 16-hour period, more than 144,000 vehicles of all types passed through the major intersection of the Santa Ana Freeway, the Ramona Freeway and the Hollywood Freeway in Los Angeles. To provide safe passage for these many motorists, an interchange is being built at the intersection. The three-way interchange will allow traffic to flow without interruption on the busy Freeways.

Charles MacClosky Co., of Los Angeles, is the contractor on the important project. Scheduled for completion in May of '55, the contract is kept ahead of schedule by skillful planning of work and equipment. Heavy traffic continues to flow while the work progresses.

At present, bottom decks and stems of the cantilevered, hollow-box girder bridge are being poured. A Moto-Crane is used to lift ¾ yd. concrete buckets to pouring position. The crane, like all MacClosky machines, is equipped with Yellow Strand Wire Rope. The hoist line and boom lines are ⅝" 6 x 19 Preformed Yellow Strand, IWRC.

Yellow Strand is first choice for the Charles MacClosky Co. as with other major contractors. The rope's strength, uniformity, flexibility and wear resistance has kept it first choice for more than 75 years. And Yellow Strand's superior performance is backed by the superior service of Broderick & Bascom distributors. Speedi-Service is their pledge to any wire rope user.

Take a tip from successful contractors — make Yellow Strand Wire Rope and Speedi-Service *your* first choice!

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PATENTED OIL AND DUST SEALS — POSITIVE ROTATION EXHAUST VALVES

A COMPLETE LINE OF 4-CYCLE AIR-COOLED ENGINES

Continental also builds air-cooled models, from 2 to 3 h.p., for heavy-duty applications in industry and on the farm. They embody the exclusive Contex® external ignition system, greatest air-cooled engine advance in recent years. For information, address Air-Cooled Industrial Engine Division, 12800 Kercheval Ave., Detroit 15.

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1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

Continental Motors Corporation
MUSKEGON, MICHIGAN

ment shrinkage caused by the very nature of the grout. Without some type of admixture, the extent of contact between bed plate and grout would probably be even less than is obtained by dry packing.

When flowable grouts are employed, an expanding cement or an admixture is used to counteract shrinkage of the mortar. The common admixtures contain either aluminum powder or iron aggregate combined with an oxidizing agent. The aluminum powder generates a gas which causes an expansion. In the iron type, the oxidizing agent causes rusting and expansion of the iron particles which offsets both settlement and drying shrinkage.

Use of aluminum involves certain precautions which, for successful results, makes it mandatory to have a competent concrete technician on hand to supervise its use. With the iron grouting compound there are fewer factors which affect its efficiency, and the desired result can be obtained by average workmen, following the directions of the manufacturer.

Most Common Admixtures

In this entire discussion we have not mentioned the most common admixture of all, and one favored by many engineers for a long time —the extra sack of cement. It is an automatic part of many specifications which are based on an arbitrary cement factor rather than performance. It is the safeguard written in to protect the owner against poor workmanship or poor proportioning. Most of the time it does provide insurance against low strengths when wet concrete is used. But it neither guarantees that wet concrete, with high water content, will not be used, nor does it contribute to any of the major qualities aside from strength. It will increase heat, volume change, and cost.

Perhaps the recognition of admixtures by leading authorities will encourage these engineers to re-examine their safeguard. They will probably find that today's admixture, with its proved merit—an ability to reduce water or increase slump without increasing water—offers just as much insurance and has the additional advantage that with good workmanship and right proportioning, the over-all quality of the concrete is improved many

(Continued on page 138)



DRILLING COSTS CUT IN HALF with this JOY TRAC-DRILL

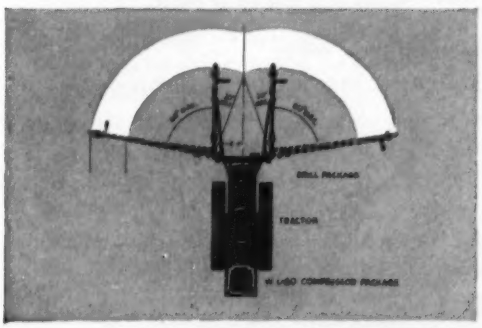
56%, TO BE EXACT was this contractor's reduction in drilling costs on his Missouri highway job, with the Joy Trac-Drill.

"STAY AHEAD OF THE SHOVELS," was the order. But *four* wagon drills driven by *two* compressors couldn't do it. Even with overtime . . . a long ten-hour day . . . the seven-man crew (four drillers, two helpers, one compressor operator) couldn't meet production.

A JOY TRAC-DRILL PACKAGE was mounted on a used tractor along with a Joy WL-80 Compressor Package. (Joy furnished complete instructions.) The rig worked like a charm. It easily led the shovels . . . and with only *four* men—two drillers, one helper and a tractor operator. The unit was completely self-contained and maneuverable. The B-I-G savings show up in the contractor's weekly cost figures:

	4 WAGON DRILLS	JOY TRAC-DRILL
Labor	$ 810	$500
Depreciation (3-yr.)	212	145
Fuel	140	86
Total	$1160	$730
Performance (week)	7200 ft.	10,200 ft.
Cost—foot of hole	16¢	7¢

THE TRAC-DRILL PACKAGE INCLUDES twin drills and feeds mounted on Joy Hydro Drill Jibs (hydraulically-actuated booms with power lift and power swing). Because the jibs are extensible, the Trac-Drill can reach out to put many holes in a straight line, if necessary, from one tractor setup. A used tractor, past its prime can thus be converted to an ace drilling machine. The whole story is in our Bulletin M-214, free for the asking. Just write ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario*



Each Hydro Drill Jib on the Joy TRAC-DRILL operates in a 100° arc making it possible with extensible 10' Jibs to drill to a 42' width.



Consult a Joy Engineer

for AIR COMPRESSORS • ROCK DRILLS • WAGON DRILLS
CORE DRILLS • BLAST HOLE DRILLS • PORTABLE HOISTS • FANS
BLOWERS • TUNNEL, QUARRY, MINE EQUIPMENT

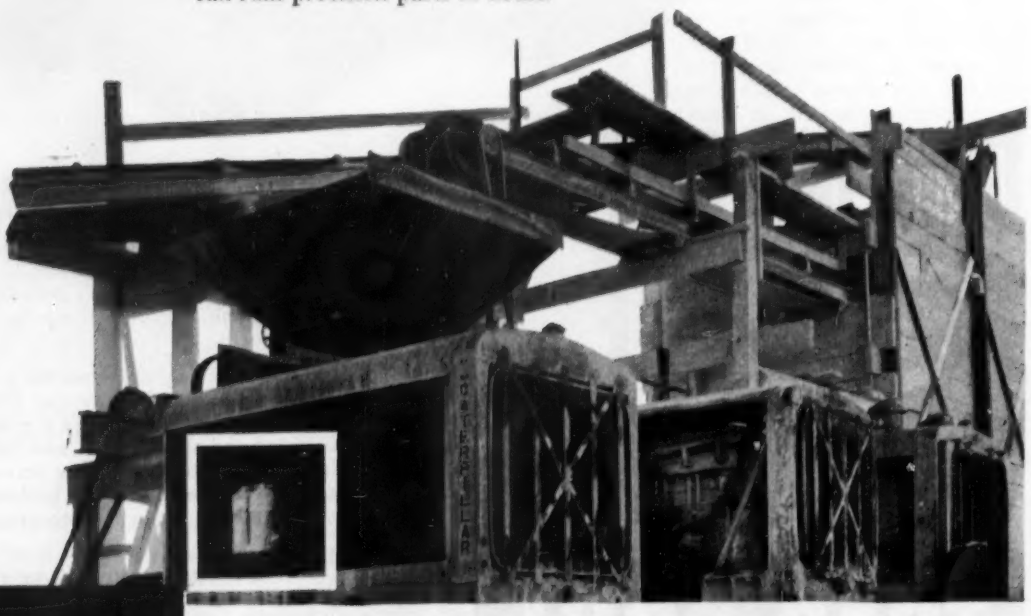
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W&D C5469

CONSTRUCTION EQUIPMENT MANUFACTURERS
FOR OVER HALF A CENTURY

are substitute filter refills ruining your engine?

When some "off-brand" or "will fit" oil filter refills are used in a full-flow system, they cannot handle sufficient volume. The by-pass valve opens and pours dangerous unfiltered oil into your engine. This inadequate filtering can ruin precision parts in hours.





Your Caterpillar dealer knows the importance of giving you only manufacturer-approved replacement filters built to Caterpillar's exacting engineering standards by Purolator. He knows that your engine life depends on it.

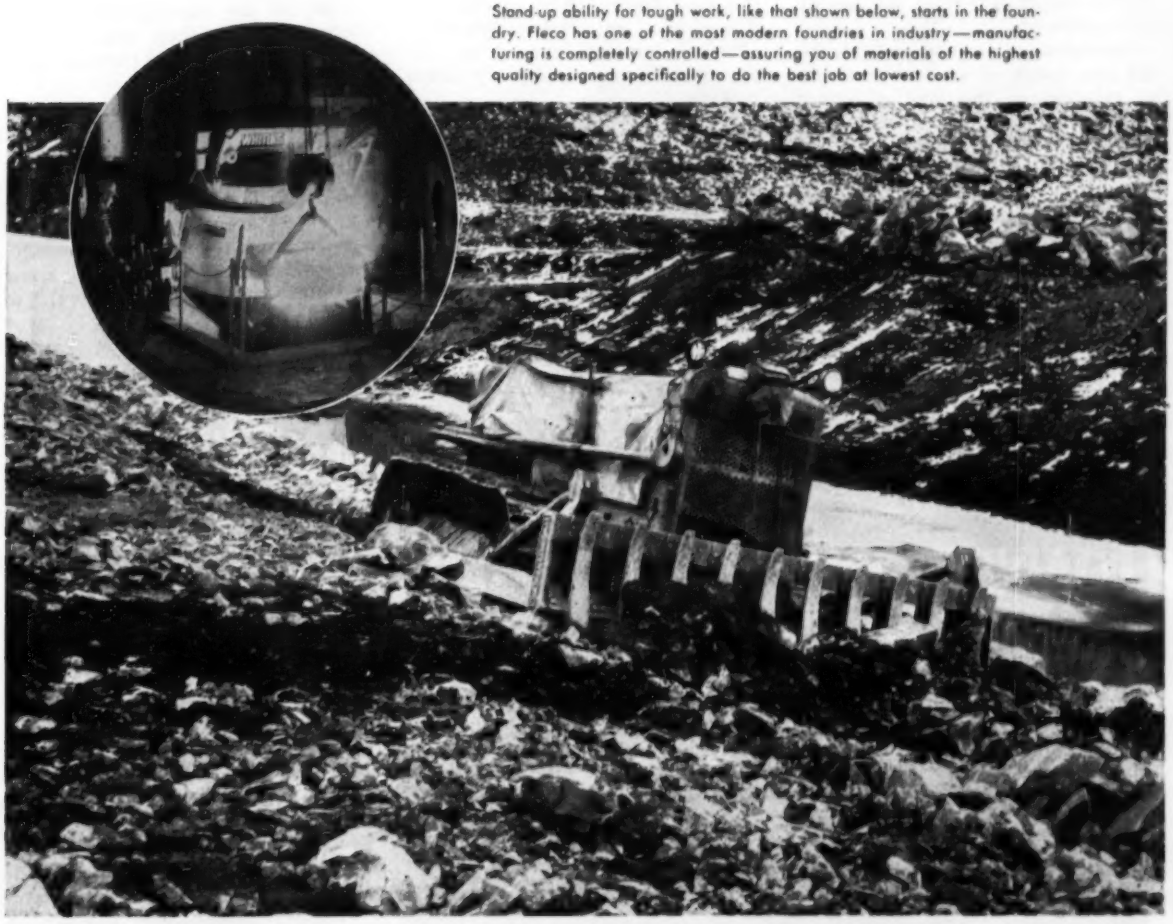
Use only manufacturer-approved oil filter refills. They're designed to meet the specific requirements of your equipment.

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Stand-up ability for tough work, like that shown below, starts in the foundry. Fleco has one of the most modern foundries in industry—manufacturing is completely controlled—assuring you of materials of the highest quality designed specifically to do the best job at lowest cost.



Rock Meets Its Master

FLECO ROCK RAKES SORT RIPRAP FOR THE PACTOLA DAM

More than 4.2 million cubic yards of earth and rock fill are going into the Pactola Dam, in South Dakota. Adler Construction Co., contractors on the huge project, assigned the tough job of clearing work sites and sorting riprap to versatile Fleco Rock Rakes.

Fleco Rakes are designed and built specifically for the tough job of handling rock and removing and stacking trees and brush in easy-to-burn piles. Strong, cast alloy-steel teeth comb the fill material, allowing undersize rock to sift through, while acceptable riprap is pushed into place.

Fleco Rock Rakes can increase the efficiency and reduce costs on *your* rock or clearing operations. There's a size and type of Fleco Rake to fit your particular job... one to match your *present* track-type tractor. Your Fleco-Caterpillar Dealer can show you the many features and profitable performance records of Fleco Rakes —just call on him or write for details.

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Root Rakes • Rock Rakes • Brush Rakes
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Subtillage Tools • Stumpers
Rolling Choppers • Cab Guards

YOUR FLECO DEALER IS YOUR CATERPILLAR DEALER

CONCRETE . . . Continued from page 134

fold, as compared with the use of extra cement.

An excellent method of evaluating the worth of an admixture is in relation to the cost of other methods of doing the same job. In 1940, the Joint Committee on Standard Specifications for Concrete and Reinforced Concrete stated, "The possibility of securing the desired results in other ways, such as by the use of additional cement, better aggregate gradation, closed water control during construction, etc., should be investigated. The committee recognizes that admixtures, under certain conditions, may impart desirable characteristics which cannot be secured as economically by other methods."

Nearly 15 years later, is is interesting to note that admixtures have met both the test of time and the test of economy. We still are not able to prove that "permanence" is a fact, but with intelligent selection and use of admixtures, we are closer to it than we were in the early 1900's. Very few of the additives now sold are offered as 'cure-alls.' Most of them are clearly identified by the manufacturer as to composition, action, and the advantages to be gained through their use.

Admixtures can help the contractor and the engineer immeasurably. The men who sell them can render valuable assistance in the office and on the job. Just make sure you are doing business with concrete men; men, who by training and practical experience, know concrete problems as they exist in the field.

Such a man can assist the engineer by advising him of any peculiar material conditions that may exist in the locality of his job, and he can help the contractor make the most efficient use of his materials in meeting the engineer's requirements. The result for the owner may well be a structure of great utility and enduring quality.

* * *

The 16th article in this series will appear in the April issue.

NO TIME LOST!
LOADING OR LAYING ITS LOAD



A STANDARD STEEL PRESSURE DISTRIBUTOR GIVES EQUAL CIRCULATION THROUGHOUT THE SPRAY BAR FOR A UNIFORM SURFACE FROM CURB TO CURB FOR LONGER WEAR

STANDARD STEEL
PRESSURE DISTRIBUTOR

The Model 424 can be loaded in quick time for a "fast getaway". A two-way cleaning system guarantees a clean spray bar at the end of the day. First, the material is sucked out of the bar and back into the tank. Then by turning one small valve, cleaning solvent is released into pump and spray bar (without contaminating the asphalt in the tank). No time lost in tinkering — no time lost in loading — Standard Steel 424 keeps going all day long far ahead of the "gravel gang"

WRITE FOR CATALOG 424

OTHER PRODUCTS OF STANDARD STEEL

Maintenance Distributors, Tar Kettles, Patch Rollers, Supply Tanks, Tool Heaters, Asphalt Tools, Street Flushers, Construction Brooms.

Built to the Highest Standard

Standard Steel Works NORTH KANSAS CITY, MO.

McGraw Will Rebuild Spire

F. H. McGRAW & COMPANY of New York has been selected as the contractor to rebuild the steeple of famed North Church in Boston, which was toppled to the street by hurricane Carol late last summer. McGraw will do the construction work without fee, as a public service.

Contributions are coming in from across the nation to help purchase the needed materials, and several materials manufacturers are donating components. The main structural members, four white oak beams, each 46 ft. long, may be the most difficult materials to obtain. Clifford S. Strike, McGraw president, said, "It is conceivable that some sections of the spire will be put in place by means of helicopter."

WANT SOME MONEY?

CONSTRUCTION MEN are coming up with new methods and unique job-built tools and machine accessories all the time. Why not take a picture or two of the next interesting development on your job? Then send pix and a complete description to us for possible publication in Construction Methods and Equipment. The chances are that we can use your material—and you will get your check right away.—**The Editor**

So light a 3 year old can lift it!



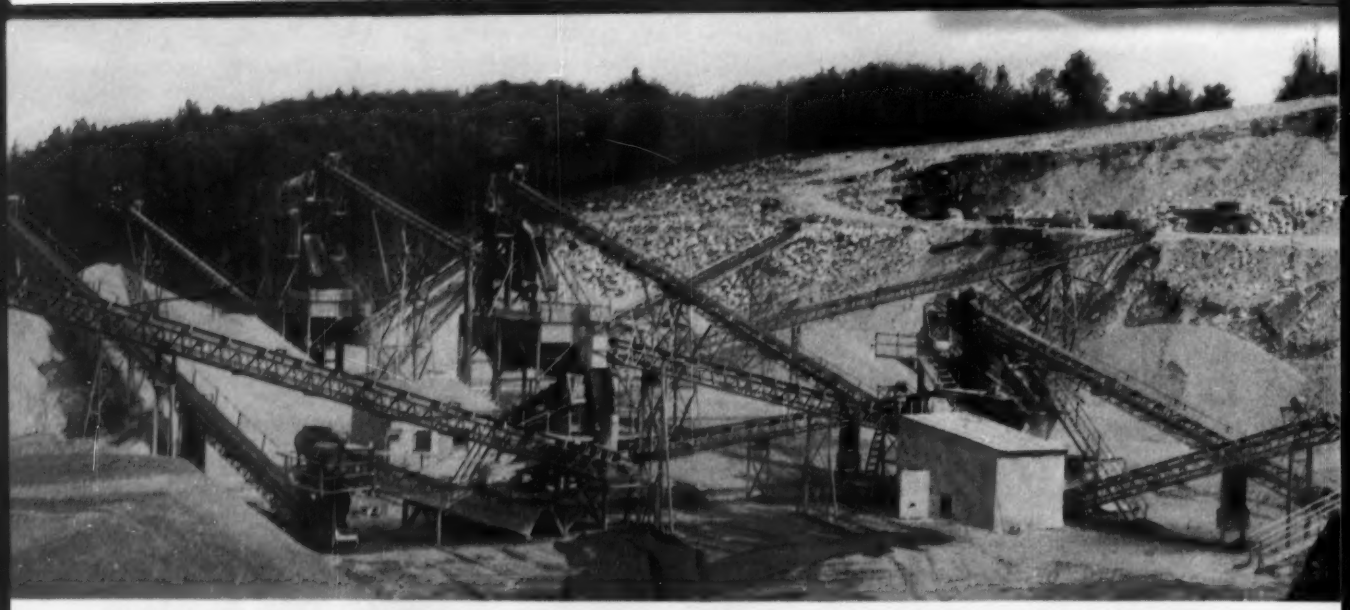
. . . Imagine what this Power Products Lightweight can do for your equipment

Do a little "imagineering" in terms of your products! Wouldn't such dramatic weight savings create tremendous advantages in your equipment — make it easier to carry — eliminate heavy and costly frame structure, wheels etc.

Lightweight is only one of the many features of the amazing Power Products Industrial engine. Full information and specifications available on request.

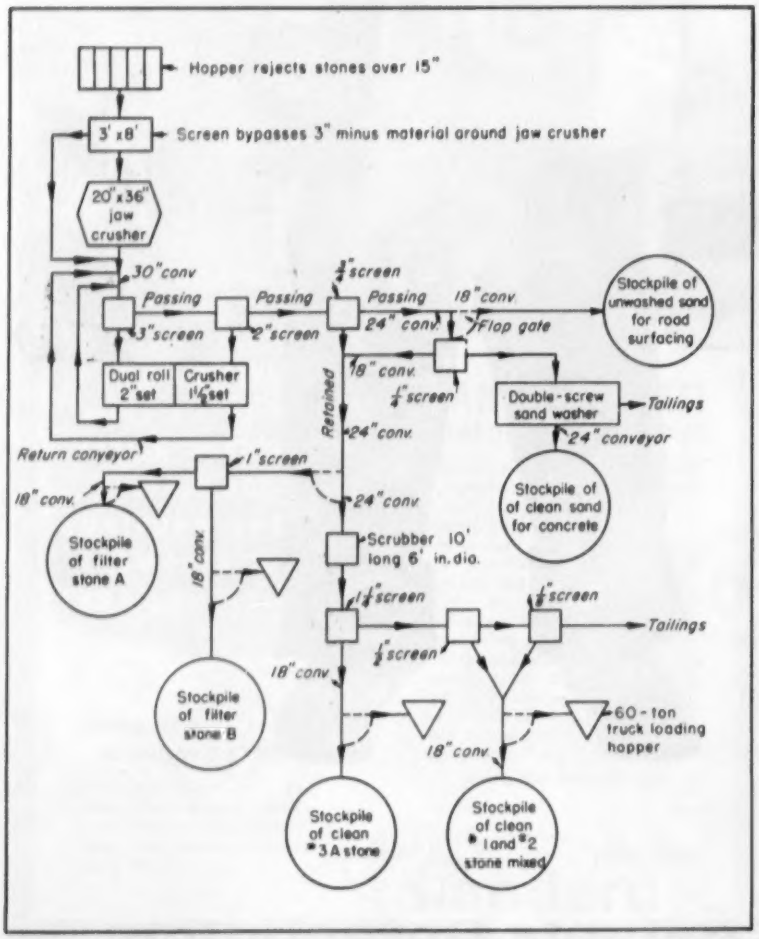
Power Products Corporation

2004 NO. 12th STREET, GRAFTON, WISCONSIN



STATIONARY GRAVEL PLANT can turn out clean concrete aggregate at the rate of 200 tons per hr, and then switch almost immediately to the production of filter stones and road surfacing material. Note gravel being excavated from bank in upper right.

Efficient Gravel Plant Produces Variety



FLOW DIAGRAM shows how flop gates easily shift crushed material from one processing unit to another. Electrically powered belt conveyors quickly move material through plant.

A STATIONARY GRAVEL PLANT supplying a group of small dam jobs on New York's Raquette River is a model of efficiency and flexibility. It can turn out clean concrete aggregates at the rate of 200 tons per hr, and then switch almost immediately to the production of filter stones and road-surfacing material. It not only crushes, screens, and washes its products, but also stores them in hoppers for easy truck loading.

The plant was designed by Universal Engineering Corp. for Niagara-Mohawk Power Corp. Contractor on the $25,000,000 hydroelectric development is Raquette River Construction Corp. (CM&E, Feb. '54, p 80).

The plant's chief feature is its flexibility. It can make crushed material into either aggregate for concrete or filter stone for rock-fill dikes and slope protection. Crushed fines can be sent directly to a stockpile of road-surfacing material or they can be washed and stockpiled as fine aggregate. Simple flop gates direct the flow of material.

Gravel processing begins at the pit where Northwest and Bay City 3/4-yd shovels load 10-ton dump trucks. After a short haul to the plant, the trucks dump raw gravel into a receiving hopper covered by a grizzly that rejects all stones more than 15 in. A plate feeder under the hopper moves the material out to a 3x8 screen that bypasses all 3-in. minus material around a



JAW CRUSHER at left processes all stones under 15 in. Dual a system of return conveyors. Unit in background screens and washes roll crushers, on right, handle 3- and 2-in. minus material through fine material for concrete aggregate.

of Materials for Group of Small Dam Jobs



STOCKPILED SAND AGGREGATE is quickly loaded into Ford dump truck by a Michigan shovel. Haul to dams averages about 7 mi. Plant was designed and built by Universal Engineering Corp.



REVOLVING SCRUBBER is mounted over a 3-deck screen equipped with rinsing jets. Aggregates can be stockpiled or stored in truck-loading hoppers. Screen blends two sizes of stone.

2036 jaw crusher. The crushed stone and the by-passed material are combined on a 30-in. conveyor which leads into a 3-deck screen. This screen sends 3- and 2-in. minus material to a double roll crusher with a return conveyor. Material passing the ¾-in. bottom deck is carried directly to the waste sand pile or is processed for concrete sand. The processing consists first of running it through a ¼-in. screen with water jets. Material passing this screen is washed further in a 36-in. dia, 25-ft double-screw machine and then stockpiled.

Material retained on the ¼-in. screen, mentioned before, is carried to a 104-ft conveyor where it is combined with the stone retained on the bottom screen at the roll crusher. This crushed material is unwashed, and suitable for filter stone in blankets on rock-fill embankments. A flop-gate at the end of the 104-ft conveyor can direct this material into the filter processing unit, or can send it beyond to the scrubbers for washing. If filter stone is needed, the material is sent through a 1-in. screen for classification. The two sizes of filter then are dropped into bins or carried out on conveyors and stockpiled.

To make two sizes of washed stone for concrete ag-

(Continued on page 144)

GET TRUCK PAYLOADS!

with the DEMPSTER DIGGSTER® GRD-101





The two photos above show some very important advantages you get when you use a Dempster-Diggster GRD-101. Photo directly above shows you why you have no truck shock with a Dempster-Diggster. You can lay bucket in truck body, trip latch and pull bucket up off load. Photo at right above shows you why you get a truck payload with a Dempster-Diggster . . . and how natural and easy it is to do so. This truck is now loaded to maximum heaped capacity, yet Dempster-Diggster has ample clearance. The dumping height is 9'6" and the digging height is approximately 15 feet. This enables the Dempster-Diggster to work with high dump equipment.

Other very important features of the new Dempster-Diggster GRD-101 include: AN EXCAVATOR THAT NEEDS NO WHEEL TRACTION (loading of bucket is accomplished by the exclusive Hydraulic Crowd and Hoist Action of the Dempster-Diggster) . . . TRUCK-SPEED MOBILITY TO AND FROM JOBS . . . AUTOMATIC BUCKET TRIP . . . MINIMUM TURNING RADIUS . . . THE SHOVEL WITH TORQUE CONVERTER . . . HYDRAULIC STEERING. Here's a shovel that gives you extra speed on the job and to and from jobs that means extra profits to you! Pound for pound, dollar for dollar, the Dempster-Diggster GRD-101 will out-dig and out-load any other available competing machine in tough going! Let us prove that statement! Write for complete information. Manufactured by Dempster Brothers, Inc.

DEMPSTER BROTHERS 335 SHEA BLDG., KNOXVILLE 17, TENN.



Progress at Tousey Varnish, since its modest beginning in 1885, has been a steady and gratifying process. In the early days the laboratory was a single room, staffed by one member of the firm whose experiments and research frequently were cut short by having to help out in other departments.

Through the years the laboratory has become an increasingly important part of Tousey's operation. Today, raw material, research and product development departments boast fully equipped laboratories with dozens of trained personnel and full time technicians.

Seventy years have been 70 years of achievement at Tousey.

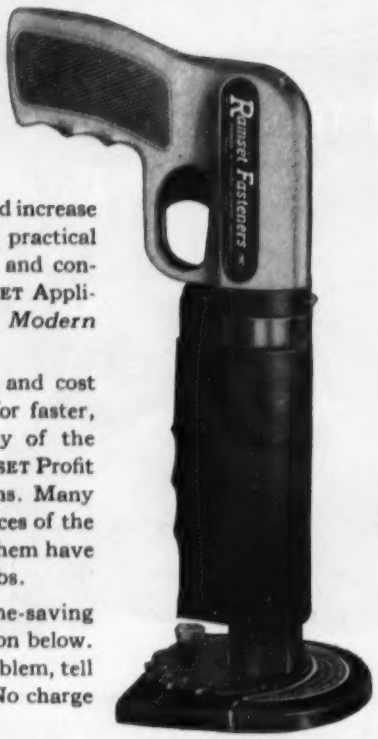
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DURACOTE for DURABILITY

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520 W. 25TH ST., CHICAGO 16, ILLINOIS



INCREASE PROFIT MARGINS with PROFIT ENGINEERING



You can closely control your costs and increase your *Profit Margin* by using the practical suggestions for fastening into steel and concrete, contained in these new RAMSET Application Data Sheets and booklet, *Modern Fastening Methods.*

Detailed drawings, photographs, and cost analyses give specific instructions for faster, easier, lower cost fastening. Many of the applications were developed by RAMSET Profit Engineers to meet specific conditions. Many others come from successful experiences of the thousands of RAMSET users. All of them have been tested and proved on actual jobs.

To obtain this cost-saving, time-saving data, just write us or send the coupon below. If you have a specific or unusual problem, tell us about it for individual analysis. No charge or obligation, of course.

Ramset Fasteners, INC.

RAMSET DIVISION, OLIN MATHIESON CHEMICAL CORPORATION
12103 BEREA ROAD • CLEVELAND 11, OHIO

Please send us Application Data on RAMSET SYSTEM for fastening into steel and concrete.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____

KIND OF BUSINESS_____

EFFICIENT GRAVEL PLANT . . .

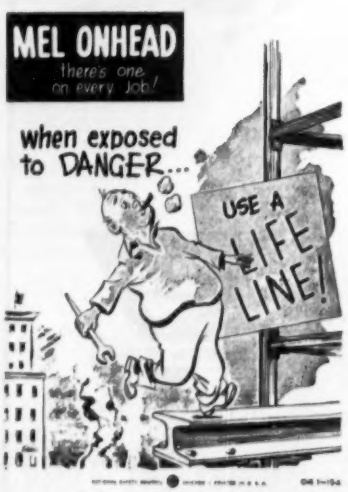
Continued from page 141

gregate, a flop-gate bypasses crushed material around the filter unit and into a 6-ft dia 10-ft-long scrubber mounted above a 3-deck screen. Stone retained on the top 1¼-in. screen is washed by water jets, dropped below into a hopper, or sent out on a stockpile conveyor. Stone retained on the middle ½-in. and the bottom ⅛-in. screens is blended, dropped below into a hopper, or sent out on a stockpile conveyor.

Washing requires about 2,000 gpm of water. The nearest source of water is a brook about ¼ mi away and over a hill. To keep a constant head of water available, the contractor built a small reservoir on top of the hill which is kept filled by a Worthington 75-hp electric pump at the brook. At the plant, a Worthington 40-hp pump operates under the reservoir head and pumps to the washing plants.

To reduce handling, most of the material is loaded into trucks from 60-ton hoppers placed under the screening units. Flop gates direct the stone into the hoppers or on to the stockpile conveyors. When it is not convenient to use the hoppers, trucks are loaded rapidly from the stockpiles by a Michigan truck-mounted ⅜-yd shovel. The haul to the dam averages about 7 mi.

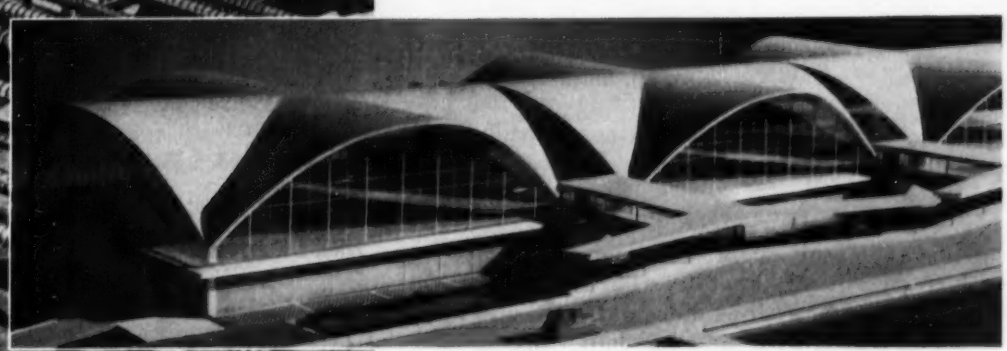
M. Morris is resident engineer and A. Willard is assistant resident engineer for Niagara Mohawk Power Corp. L. Wagner is project manager and N. Stone, L. Hewitson, and E. Martin are superintendents for Raquette River Construction Corp., contractor on the $25,000,000 hydroelectric development.





Laclede Reinforcing Bars

. . . the "backbone" that gives strength and support to St. Louis' amazing new Airport Terminal Building



Architects: Hellmuth, Yamasaki & Leinweber, St. Louis
Structural Engineer: William C. E. Becker, St. Louis
Engineering Consultant: Roberts & Schaefer Co., Chicago
Contractor: L & R Construction Co., St. Louis

A bold new approach to airport terminal design has made the unusual structure pictured above, now being completed at St. Louis' Lambert Municipal Airport, a sensation in the architectural and construction world.

The obvious focus of attention is the massive but graceful roof, formed of huge intersecting cylindrical shells of concrete, 120 feet wide but only 4½ inches thick. The illusion is one of lightness and airiness, belying the roof's actual weight of 3,000 tons.

Because there are no internal supports, inherent strength is of special importance in a building of this type.

Much of that strength is provided by the use of Laclede Multi-Rib Round Reinforcing Bars, not only in the roof but throughout the entire terminal.

These Laclede-designed bars represent the perfect balance between high strength and maximum anchorage, and are enjoying ever-widening use by contractors throughout the nation.

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

FINANCIAL AID TO HIGHER EDUCATION

Our Colleges and Universities Are Living on Borrowed Time

. . . time borrowed from underpaid faculty members

The chart on this page tells a story of profound importance to every American. It is the story of the financial beating our college and university faculty members have been taking in the past 14 war and postwar years.

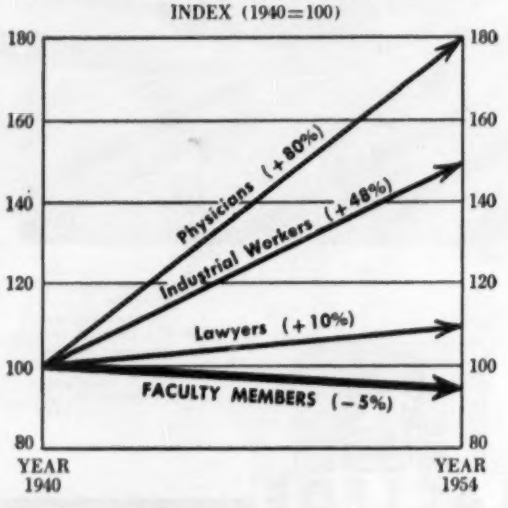
On the whole, this span of 14 years has been one of great and growing prosperity. But, as the chart shows, our college and university faculty members have, as a group, had less than no share in it.

During this period, from 1940 through 1954, the real income of the average industrial worker (that is, what his wages would purchase in goods and services) has increased by almost one-half. Among professional groups, physicians have enjoyed an increase of about 80 per cent in their real income. Lawyers, far less favored financially, have had an increase of about 10 per cent. But faculty members have not only had no increase at all; over these years of prosperity their average real income has fallen by 5 per cent. These figures do not take account of the increase in taxes since 1940.

Senior Teachers Hardest Hit

These figures are, of course, averages. For some groups of faculty members it has been better; for others worse. It has been particularly hard on senior faculty members. Between 1941 and 1953 their salaries lost about 8 per cent of their purchasing power. Being deeply committed to their careers they could not respond to alternative employment opportunities as readily as could their junior colleagues. For junior faculty members there was some increase in real income between 1941 and 1953 but only about half as much as the average for the nation.

What's Happened to College Faculty Salaries*

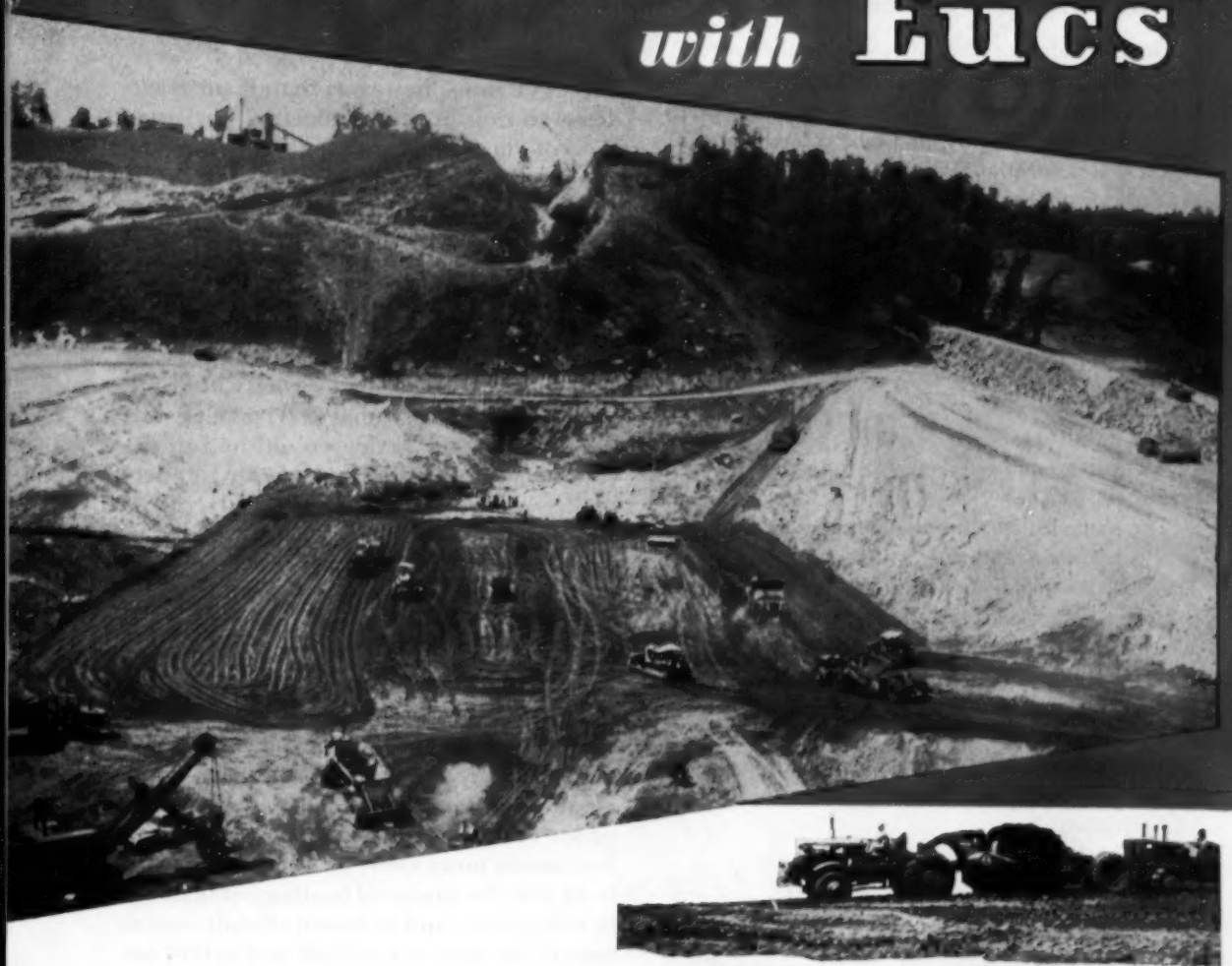


* Real Income before Taxes.

Source: Council for Financial Aid to Education; U. S. Dep't of Commerce; U. S. Dep't of Labor.

(Continued on page 148)

Moorman builds Buford Dam with "Eucs"



● J. W. Moorman and Son, well known Texas contractor, is using 31 Euclids to move about 4 million cu. yds. of earth and rock at Buford Dam 35 miles northeast of Atlanta, Georgia. This rolled earth fill dam, being built under supervision of the U. S. Army Corps of Engineers, will rise about 200 ft. above the river bed and will be 1,630 ft. long. It's a multi-purpose project that will provide improved navigation in the Apalachicola River during lowflow periods, as well as flood control, water storage for Atlanta and production of hydro-electric power.

Work on the main dam was started in June of 1954 and by January of this year was about 80% completed. In addition to the big yardage of earth fill, over a half million yards of rock must be moved so Moorman is using "Euc" Rear-Dumps and Bottom-Dumps as well as Scrapers. Two Euclid water wagons play an important part, too, in providing the moisture necessary for proper compaction of the fill. A fleet of 16 "Euc" Scrapers with top extensions move loads averaging 16 bank yards on hauls of about 4,000 ft. The Bottom-Dumps and Rear-Dumps are loaded by shovels and draglines in an upstream borrow pit and from stockpiles placed by "Eucs" that worked on earlier contracts for saddle dikes, tailrace and powerhouse excavation.

Yes, Buford Dam is another 100% Euclid earth moving job . . . evidence that leading contractors like J. W. Moorman and Son depend on "Eucs" for their toughest jobs. Your nearby Euclid dealer will be glad to give you facts and figures on the complete line of Euclid equipment and help with your earth moving problems . . see him soon.

EUCLID DIVISION GENERAL MOTORS CORPORATION, **Cleveland 17, Ohio**

Cable address: YUKLID

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM GENERAL MOTORS

Public Colleges Fare Better

There are also marked differences in the average financial reward received by faculty members in different types of colleges and universities. A recent study by the Council for Financial Aid to Education indicates that, in the last academic year, 1953-1954, teachers in privately endowed, independent colleges and universities were paid an average salary about $1000 less than that paid to faculty members in tax-supported institutions. The same study indicates that salaries far below the average are especially common for faculty members in the small private liberal arts colleges. This study found that during the last academic year the average salary of all college and university faculty members was about $4700.

The special difficulties under which the independent colleges and universities, and particularly the independent liberal arts colleges, are laboring to get back on their feet financially have been discussed in previous editorials in this series. These difficulties underline the need of special help for these institutions to which business firms are now contributing in increasing volume. However, the problem of providing better salaries is not peculiar to any particular type of institution.

Faculty Members Not Greedy

It is not easy to prescribe a precise standard of fair pay for college and university faculty members. This is partly because they put less weight relatively on money rewards than they put on rewards of scholarly accomplishment and prestige. Consequently, they have consistently been willing to work for very modest salaries in relation to the intellectual ability, education and application required. Obviously, however, it is the dictate both of fairness and good judgment to see that faculty members are given a roughly proportionate share in the general prosperity. Indeed, their crucial role in our society could be made to justify a larger share than this.

There is no way to know with any degree of precision what the underpayment of our college and university faculty members over the past 14 years has actually cost the nation in terms of reduced quality of intellectual performance of those institutions. One reason is that the damage has been minimized by the devoted services of many faculty members who have loyally stuck to their jobs in spite of the great financial discouragement.

It is obvious, however, that, if no grave deterioration in the intellectual performance of our colleges and universities has occurred so far, it is because we have been living on borrowed time. It is time borrowed from faculty members who have, in effect, been subsidizing these institutions by their financial sacrifice. This arrangement is not only a menace to the cultural and intellectual life of the nation, it is also a menace to our national security in a time when successful national survival may well depend in peculiar degree on the full development and utilization of our intellectual resources. We depend on our college and university faculties pre-eminently to provide this development. Adequate financial reward for such service is an elementary form of national insurance.

Many of our colleges and universities are working hard to improve the financial lot of their faculty members. Business firms are also playing an increasing role of providing the necessary financial assistance. The methods being used by business for this purpose will be the subject of another editorial in this series. However, **vastly more must be done, and quickly, to stop the financial beating being taken by our college and university faculty members if the nation's welfare and safety are to be properly protected.**

This message is one of a series prepared by the McGraw-Hill Department of Economics to help increase public knowledge and understanding of important nationwide developments that are of particular concern to the business and professional community served by our industrial and technical publications.

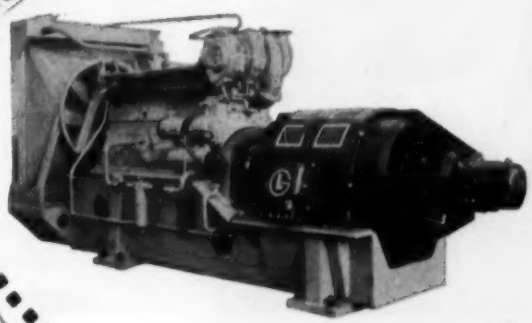
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Donald C. McGraw

PRESIDENT

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DEMAG



DEMAG A.G., Duisburg, manufactures Universal Excavators electrically welded throughout since 1929 and can be proud of having introduced into this branch the welded construction of: truck frames, rotating platforms, winch frames, face shovel booms, dragshovel booms, drums, and rope pulleys.

Demag Diesel or electric-powered Universal Excavators, with dipper capacities ranging from ½ to 9 cu. yds., are in operation all over the world.

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DBA 4018



COMPLETE CRAWLER TRACK is mounted on fixture rotated by electric motor when grousers are to be renewed. Heavy turnbuckle adjusts for length. Two men weld downhand, one at each end.



HEAVY BEADS have been laid across these grousers with Stoody hardfacing rod for greatly increased life under rough-service earthmoving operations.

Fixture Speeds Grouser Welding

WORN GROUSERS on crawler tractor track pads are renewed manually with all down-hand welding on an efficient two-man fixture developed and used in the Reno, Nev., maintenance shops of Isbell Construction Co.

A complete track is mounted on the welding jig, which simulates installation on the tractor. One end of the track is supported on an idler and the other is carried by a sprocket, driven by an electric motor whenever the track is being rotated. Large turnbuckles are used to adjust idler position for tracks of various lengths.

Grousers are renewed with steel bar stock measuring ½x1¼ in., torch-cut to the right length to fit track width. These pieces are welded across worn grousers with high-tensile, low-hydrogen electrodes.

One welder is stationed at each end of the fixture to permit downhand welding on each side of the bars. Welding time is cut in half and track handling is simplified. After new bars have been welded to the worn grousers, they receive a single heavy stringer bead of coated Stoody Self-Hardening rod across the tops.

Renewing of grousers could be accomplished without removing tracks from the tractors, but often it would entail taking a tractor out of production and sacrificing its earnings. Isbell maintains an ample supply of spare parts, and welding is done during slack periods—reducing both downtime and maintenance costs on its large fleet of heavy earthmoving equipment.

A WORD OF CAUTION: We are reminded by Stoody Company technicians that application of any hardfacing material is not recommended on new grousers. Some of these have been induction-hardened at the factory for long wear. When finally worn down, the hardened portion has worn away and the remainder presents no welding difficulties.—ED.

No Comment Necessary

RECENTLY A CHICAGO NEWSPAPER carried the following report under the heading, "Guard Hole Where Boy Drowned":

"A watchman has been stationed at a 20-ft. deep sewer excavation in Hillside after the drowning of a 7-year-old boy. The boy, Craig Heller, 315 Elm, Hillside, drowned Thursday when he broke through the ice covering 12 ft. of water in the hole.

"The excavation is at the edge of the Congress St. Expressway near Laverne Avenue in the suburb. Hillside Police Chief Robert Zimmerman said the hole, about 10 by 12 ft. wide, was uncovered. Zimmerman said he notified a representative of the contracting firm that dug the sewer, and a watchman was assigned there immediately by the firm.

"The boy, a second grade pupil of Hillside Public School, was reported missing by his father Earl, 30. Police found the boy's school books on the ice. Firemen pumped the hole dry and recovered the body."

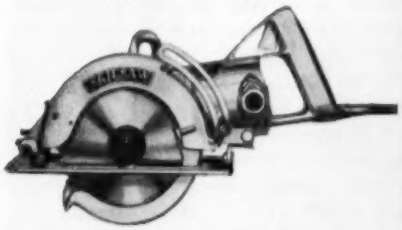
Trade in your old saw and save $22.50

ON A NEW SUPER DUTY SKIL SAW!

Power increased up to 107%!

Blade speed increased up to 40%!

Lighter weight, greater performance than ever before!



NEW SKIL SAW 77 (7¼" Blade—Super Duty)—Speed increased 40% to 4500 r.p.m. and weight cut to 15¾ lbs. Power output boosted 100%. Depth of cut 2⅜"—Bevel cuts 2" dressed lumber at 45°. Most popular SKIL Saw for all-around carpentry—the standard for general construction. Power to cut wet lumber or tough materials such as metal, stone, compositions.

Price, New Model 77 less case..$112.50
Trade-in credit..... 22.50
***Your Cost, Only*.....$ 90.00**

NEW SKIL SAW 825 (8¼" Blade—Super Duty)—Speed boosted 34% to 4000 r.p.m. and weight reduced to 17¼ lbs. Power output increased 107%. Depth of cut 2⅝ inches. Bevel cuts 2" rough lumber at 45°. A powerful, super duty saw, ideal for use on either residential or commercial construction. Powered to easily cut 2" rough lumber—wet or dry—as well as many other tough and resistant materials.

Price, New Model 825 less case.$134.00
Trade-in credit..... 22.50
***Your Cost, Only*.....$111.50**

This offer good at all authorized SKIL Distributors.

Call the one nearest you today.

OFFER CLOSES MAY 31, 1955

For Additional Information write:

SKIL
PORTABLE TOOLS

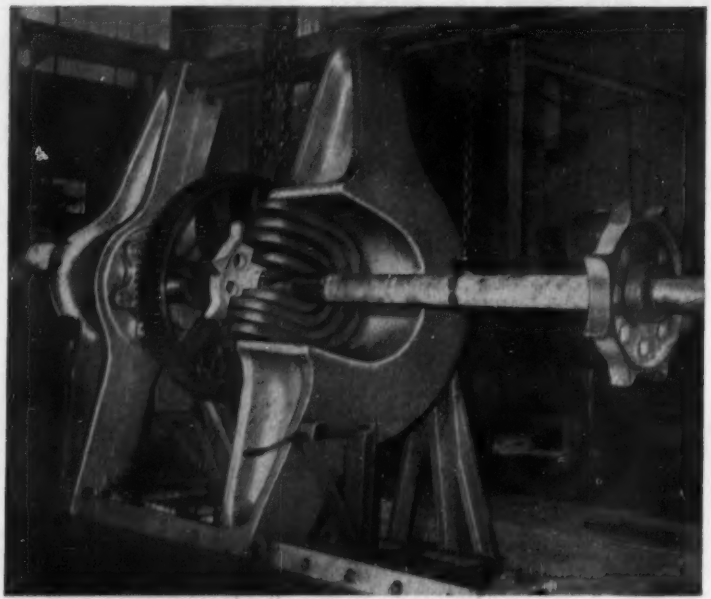
Made only by SKIL Corporation formerly SKILSAW, Inc.

5033 Elston Avenue, Chicago 30, Ill.
Factory Branches in ALL Leading Cities





A MOUNTAIN of POWER



POWER FOR BIG JOBS—This Rodgers 600-Ton Inclined Forcing Press is forcing a large gear and sprocket from a mine machine shaft.

—or a touch of pressure

The heavy machines and equipment used in the great iron mining industry present a variety of problems when repair or maintenance is necessary. For this work the accurately controlled action of Rodgers Hydraulic Forcing Presses is a real time and work saver.

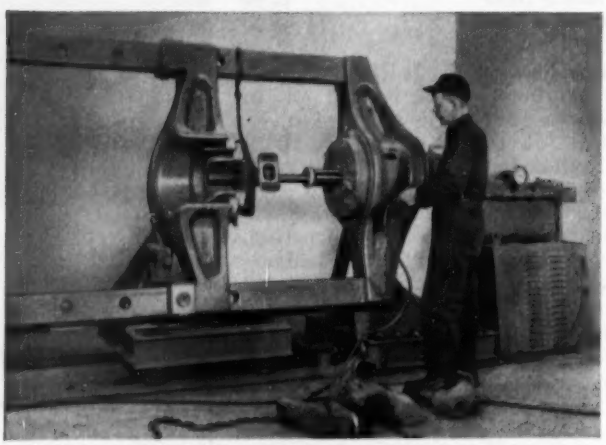
A Rodgers Forcing Press puts a mountain of power at your fingertips to force wheels, sprockets or gears from their shafts and for straightening, assembling, swedging or upsetting jobs. Operators also use the versatility, speed, power and positive control of a Rodgers Forcing Press to efficiently perform small pressing and forcing jobs with just a touch of pressure—tasks once done only on vertical shop presses!

you get both with RODGERS FORCING PRESSES

Rodgers vertical, horizontal and inclined forcing presses offer capacities from 100 to 600 tons . . . up to 9 feet between tension bars . . . up to 16 feet between ram and abutment . . . single or double acting cylinders with 13 or 26-inch ram travel (72-inch travel available) . . . electrically powered hydraulic pumps with selective, positive pressure adjustment and remote control . . . removable press cylinders that can be used in special jacking or pulling jobs . . . and many more features that assure you of dependable, long life operation—all fully described in this Rodgers Catalog Number 315A.



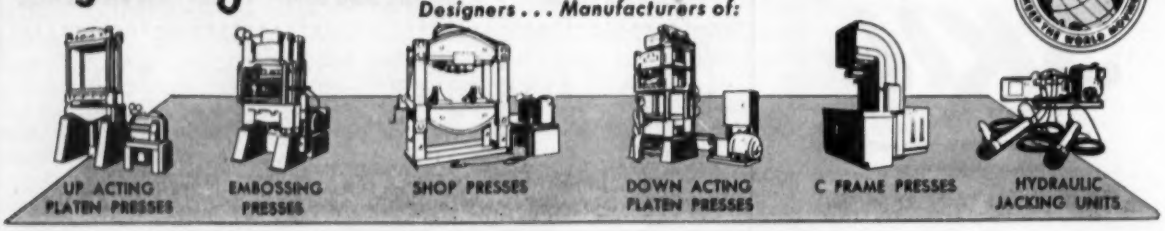
Write for it today!

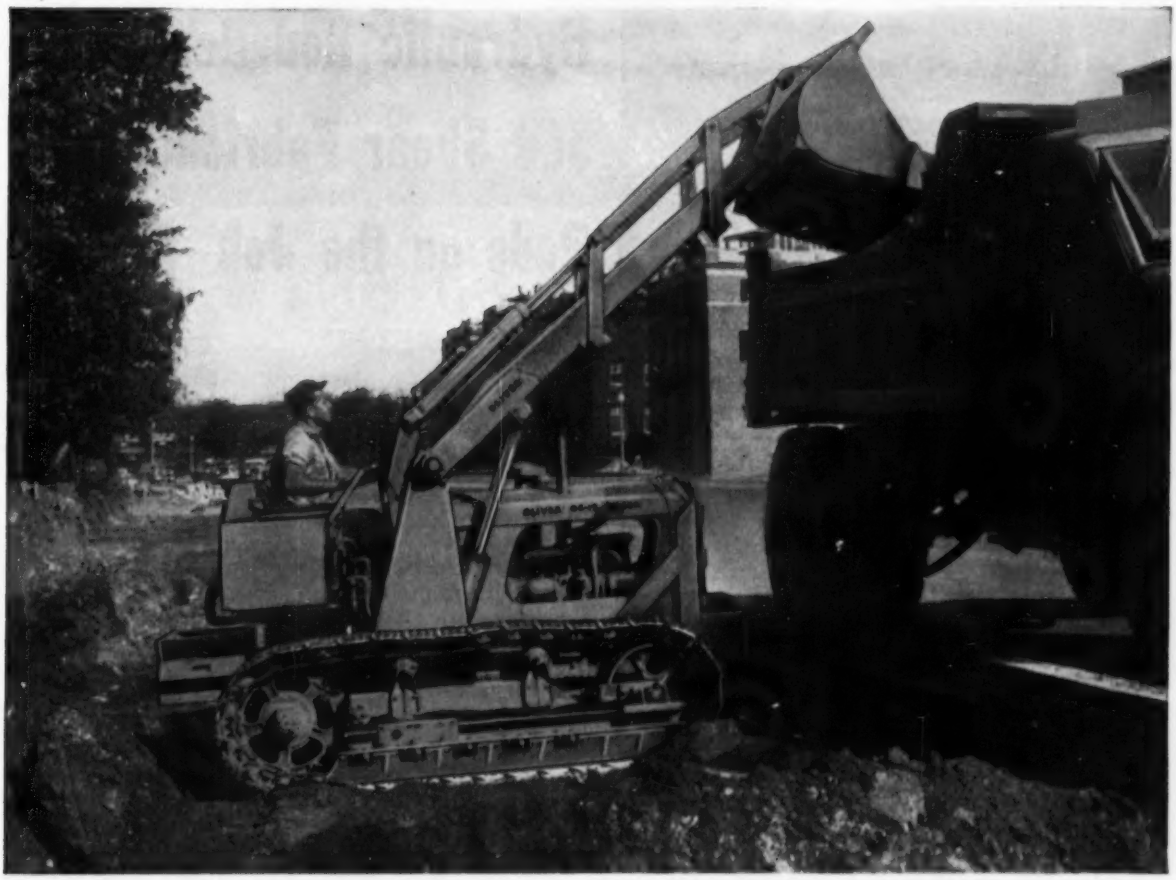


LIGHT TOUCH FOR SMALL JOBS—This Rodgers 300-Ton Inclined Forcing Press is used on small as well as large equipment repairs. Here, a pin is being pressed out of a tractor idler support bracket.

Rodgers Hydraulic Inc. 7403 Walker Street, Minneapolis 16, Minn.

Designers . . . Manufacturers of:





Oliver "OC-12" with hydraulic 1-yd. loader. This model has the long track frame for added stability. Loader has exceptional bucket rotation and 10' 4" loading height.

Another great tractor by Oliver ...THE POWERFUL "OC-12" CRAWLER!

It's a rugged, eager worker in the 45 drawbar h.p. class that features advancements in power, economy and operating ease to make every job more profitable.

The "OC-12" offers two engines of exceptional torque span—diesel or gasoline. Both engines have instant electric starting, pressure cooling, by-pass thermostat and full-flow oil system to insure quick starting and long, low-cost service.

The smooth lines of this unit show it is made for easy access and operator visibility. Controls are right where they're the handiest. Down to the key-lock switch, foam rubber seat, overhead-linkage clutch, this tractor caters to operator convenience.

Your Oliver Industrial Distributor will be glad to demonstrate the "OC-12." Give him a call.



The "OC-12" is available in two track widths: 44- and 60-inch—and two track lengths, one with four lower track wheels and one with five. Standard grousers are 14-inch.



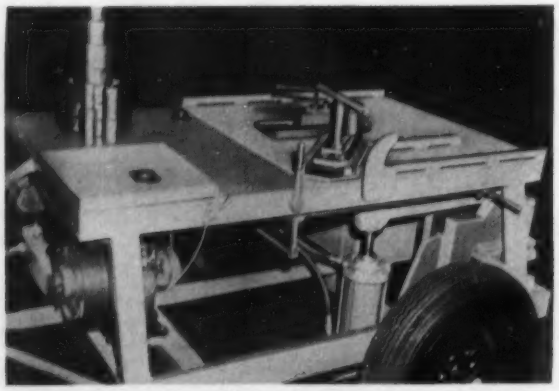
Here is the "OC-12" with hydraulic bulldozer. Hydraulic pump is front mounted. Special protective grille is part of 'dozer frame. Blade has provision for tilt adjustment.

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

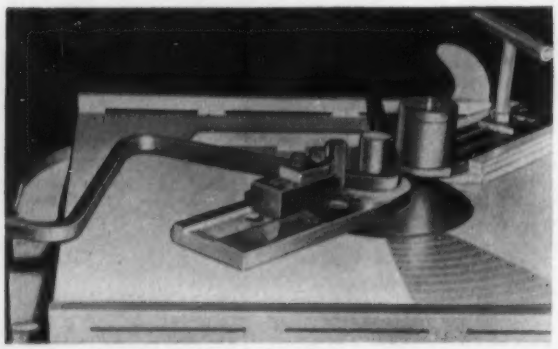
OLIVER

a complete line of industrial wheel and crawler tractors

Hydraulic Rod Bender and Shear Fabricates Rods on the Job



IRON MAN hydraulic-portable bender and shear is available in either portable or stationary models and comes complete with dies.



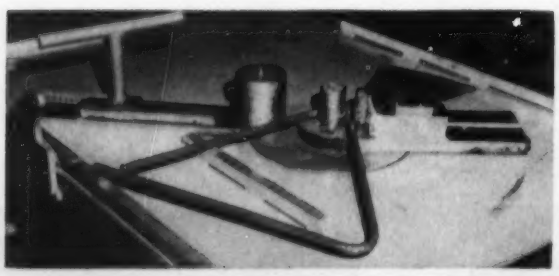
1-IN. SQUARE, hot rolled bar for fabricated beams is precision formed in this operation. A slide bar helps to position stock.

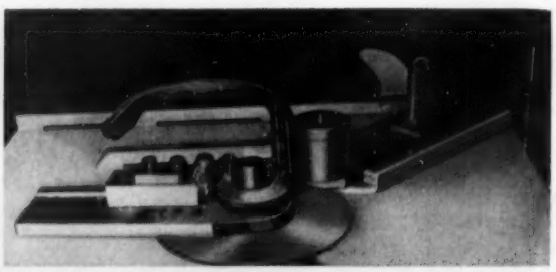
THE IRON MAN hydraulic-portable rod bender and shear can fabricate reinforcing rods on the job at the rate of 6 tons per hr, according to the manufacturer, Acme Equipment, Inc., Altoona, Pa. Basically it is a heavy steel table, 40x40 in., topped with ½-in. steel plate. The bending mechanism consists of a rotary disk in the center of the table. It has upstanding lugs, one co-linear with the disk axle and one at the rim, which are fixed in appropriate positions to perform various bending operations. Claimed to be the first hydraulically operated machine of its type, it uses a 3½-in. ram with a 15-in. stroke. The pump moves 7 gal of oil per min at 1,500 psi.

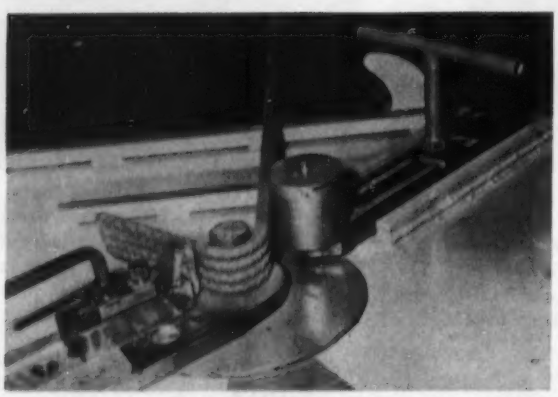
It comes equipped either with an 8.4 gas motor or a 10-hp electric motor, or both.

All standard bends can be handled with the portable unit. It bends rod in 5-deg increments from 5 to 190 deg, handles as many as 5 bars of No. 2 ¼-in., or No. 3 ⅜-in. in a single stroke.

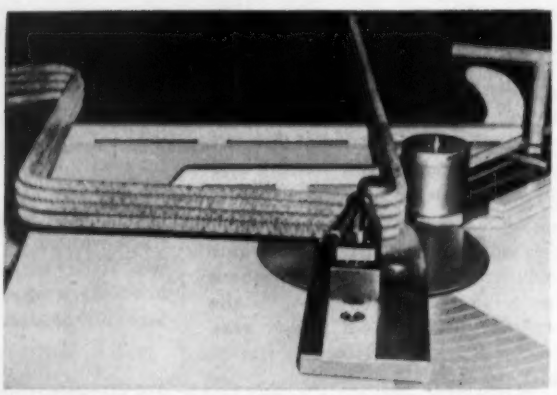
It can also do precision shearing on three bars—No. 2 ¼-in. or No. 3 ⅜-in. in a single stroke.







AN EQUILATERAL TRIANGLE (top photo) is being formed from ¾-in. re-rod. In the bottom photo, a 135-deg angle is being put on No. 5 ⅜-in. re-rods, four at a time.



TWO 180-DEG BENDS in No. 11 1½-in. re-rod are being made (top photo). Rotary motion of the hydraulically actuated disk (bottom photo) forces a 135-deg bend in 4⅝-in. stirrups.

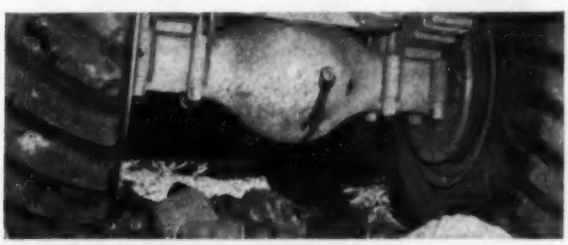
The Engineer's Report

CASE HISTORY
LUBRICANT RPM Multi-Service Gear Lub.
FIRM Orr & Orr Construction Co., Phoenix, Arizona

Rear axles "perfect" after 1755 hours on rock haul



SHORT HAULS ON STEEP GRADES WITH OVERLOADS OF ROCK was the tough job assigned to three Orr & Orr Construction Co. Kenworth dump trucks. But rear axle gears, lubricated with RPM Multi-Service Gear Lubricant, showed no measurable wear when torn down for inspection by the manufacturer's mechanics after eight months—1755 hours service. Mechanics reported hypoid differential gears and final reduction planetary gears "perfect." All gears, bearings and other parts were put back in service. Orr & Orr Construction Co. uses RPM Multi-Service Gear Lubricant in all types of gear units. They operate equipment on highway, street, dam and other construction projects throughout the Southwest.



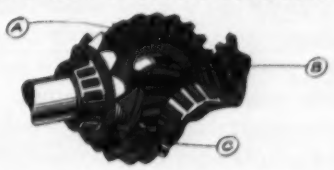
ONE OF THE KENWORTH AXLE UNITS is shown here. All three are full floating, planetary type. Gears have a total reduction of 19.23 to 1. RPM Multi-Service Gear Lubricant protects all gears in the most severe operations.

FOR MORE INFORMATION about this or other petroleum products of any kind, or the name of your distributor, write or call any of the companies listed below.

RPM

TRADEMARK "RPM" REG. U. S. PAT. OFF.

How RPM Multi-Service Gear Lubricant prevents wear in severe conditions



A. Contains a special compound that reacts chemically with metal to form a protective lubricating coating...resists rubbing action of hypoid gear teeth.

B. Withstands extreme temperatures and pressures...highly oxidation resistant. Keeps gears and bearings cool.

C. Inhibitors resist ru ting, stop foaming in cases. Lubricates integral bearings and other parts. Will not separate.

STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
THE CALIFORNIA OIL COMPANY, Barber, New Jersey • THE CALIFORNIA COMPANY, Denver 1, Colorado

Dry-Type Air Filtration Helps Cut Engine Wear

CONTRACTORS now have the opportunity to help extend the life of diesel and gasoline engines, reduce fuel, lubricating and maintenance costs, through the use of dry-type Micronic air filters now being manufactured by Purolator Products, Inc., Rahway, N. J.

Chief advantages claimed are:

Flexibility: It can be mounted in any position on any engine.

Easy to Service: Once the oil filter base is mounted to a carburetor, it becomes an integral part and doesn't have to be removed to service the refill.

Less Weight: The unit weight is about half that of conventional type filters, so less strain is on carburetor air horns.

Less Pressure Drop: The element has from 10 to 50% less pressure drop than wet-type filters, thereby helping to keep the engine power at maximum output.



DRY-TYPE MICRONIC FILTER (Model AF-100 Purolator) is designed for updraft air intake. It's 8½ in. in diameter and 8¾ in. high.

The Micronic element of the new filter is made of special resin-impregnated cellulose which resists moisture, acids, oils and exhaust gases. The element is convoluted and formed into a cylindrical refill to fit filter housings. The Model AF-100 unit has 166 convolutions and 2,200 sq in of filtering surface. Purolator engineers report that the unit will remove more than 99% of all particles from air entering a gas-engine carburetor or a diesel combustion chamber, thereby prolonging engine life because of the reduction of wear on moving parts.

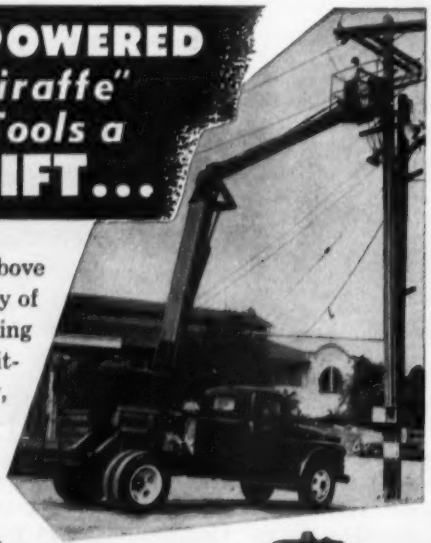


COMPONENT PARTS of the AF-100 Micronic dry-type element are cover flange, element support cup and clamping ring.

When new, the filter element is able to remove particles 1 micron (.00004 in.) in diameter. When it has been in service long enough to build up a filter "cake" on the element surface, it can remove par-

(Continued on page 160)

WISCONSIN-POWERED
New Pitman "Giraffe" Gives Men and Tools a Fast, **HIGH LIFT...**



With a reach up to 40 ft. above the ground and a lift capacity of 1500 lbs., this unique, folding type aerial boom, made by Pitman Mfg. Co., Kansas City, Mo., speeds up many overhead jobs in construction service. Can be used for hoisting men, tools and materials for roofing and similar work, drilling in quarries and construction jobs, working on power lines, setting light utility poles, placing transformers and similar operations.

A 2-cylinder Model TFD Wisconsin Heavy-Duty Air-Cooled engine supplies dependable, quick-starting, all-weather power which can also be used to drive compressor or generator . . . again demonstrating the great versatility and adaptability of Wisconsin Engines . . . providing always ready-to-go Lugging Power to Fit the Job and the Machine . . . 4-cycle single cylinder, 2- and 4-cylinder models 3 to 36 hp.

You can't do better than specify "Wisconsin Power" for *your* equipment. Write for Bulletin S-164.



Models ABN, AKN, AEN, 4-cy. single cyl., 3 to 8¼ hp.



Models TE, TF, TFD 2-cylinder, 7 to 15 hp.



Models VE4, VF4, and VG4D, V-type 4-cyl., 15 to 36 hp.



WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
MILWAUKEE 46, WISCONSIN

"Best Front End Loader This County Ever Had"



CALICHE BASE FOR A NEW ROAD in Bee County, Texas, is obtained from leased pit near Skidmore. INTERNATIONAL DROTT TD-9 Skid-Shovel loads out all the material needed for building and maintenance along county's 450 miles of roads, keeps four trucks busy hauling.

Bee County, Texas, cuts materials handling, excavating cost with INTERNATIONAL DROTT Skid-Shovel, according to County Commissioner H. F. Speikerman

Materials handling, sewer and gutter excavation, ditching and stockpiling start the long list of jobs handled by the INTERNATIONAL DROTT TD-9 Skid-Shovel owned by Bee County, Texas.

"There's just nothing that this Skid-Shovel can't do," according to County Commissioner H. F. Speikerman.

"Any type of loading work or any small excavating job is done much better, much faster and with much less expense by this unit.

"We saw all the tractor-mounted front-end loaders in operation but none of them could match the performance or the production of the INTERNATIONAL DROTT *TD-9 Skid-Shovel."*

Only with INTERNATIONAL DROTT Skid-Shovels do you get the benefit of Skid-Shoes which utilize the lever principle to provide 300% greater bucket break-out or digging force. Heaped loads are transported at ground level . . . and in high gear . . . on the Skid-Shoes, which take wear and carrying strain off the tractor.

The exclusive and patented Hydro-Spring absorbs 70% of the shocks normally encountered in front-end loaders, extends the life of the equipment, makes operating far easier.

INTERNATIONAL DROTT Skid-Shovels are available in four sizes. For the unit best suited to your job, call your International Industrial Power Distributor today.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS
DROTT MANUFACTURING CORP., MILWAUKEE 8, WISCONSIN

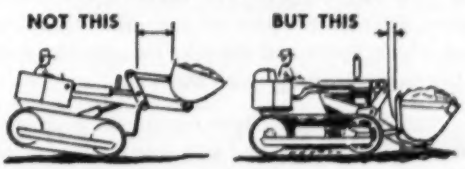
PRY-ACTION BREAK-OUT



3,000 to 9,000 lbs., all on front of tractor

9,000 to 27,000 lbs., all on loader shoes on ground

SKID-SHOE TRANSPORTATION



INTERNATIONAL HARVESTER

INTERNATIONAL® DROTT



Maracaibo Breakwater Job Progressing On Schedule

Now under construction at the entrance to Lake Maracaibo, Venezuela, is a breakwater to keep the canal open allowing ships to come in to the lake from the Caribbean Sea.

Maintaining building schedules on this 11,500 foot long dike, 100 feet wide at the base and 24 feet wide at the top which protrudes 10 feet above the surface of the water, requires the highest quality, most dependable equipment available.

General contractor Campenon Bernard of Venezuela assured himself of trouble-free, continuous material handling operations by selecting four Clyde hoists and four Clyde derricks for the job.

Two hoists and derricks at a quarry on Toas Island, load rock into barges. The barges are towed to Zapara Island, the start of the dike where two more Clyde hoists and derricks transfer the rocks to trucks for discharging on the dike.

It's rugged work but Clyde equipment is designed and built to stand up and give month after month of dependable, economical service.



Whatever your material handling problems are, compare the value and quality of Clyde equipment. Write for special bulletins on any type of Clyde products.

HOISTS—DERRICKS—WHIRLEYS—BUILDERS TOWERS—CAR PULLERS—HANDI-CRANES—ROLLERS

CLYDE IRON WORKS, INC.
Established in 1899
DULUTH 1, MINNESOTA

ONE OF THE 16 INTEGRATED COMPANIES
BARIUM STEEL CORPORATION

"completely satisfied"

"people who rely on honesty and fair dealing..."

"I would unhesitatingly recommend your firm..."

"splendid performance and wonderful outcome..."

4 typical comments about FORKE BROTHERS equipment auctions

Take the word of construction men who have had experience in selling equipment — the Forke Brothers PLAN OF AUCTION gets results! Here's what four of these men have to say:



"We wish to take this opportunity to thank you for the very satisfactory manner in which you conducted the sale and want you to know that we are completely satisfied with the outcome..."

Perry McGlone
Perry McGlone Construction Company
Kansas City, Kansas

"It is a distinct pleasure to meet people in the business world today who still rely on honesty and fair dealing."

Marshall M. Erb
Contractor
Naperville, Illinois

"...I would unhesitatingly recommend your firm to anyone in the process of liquidating..."

Ralph Cornish
Cornish Construction Company
Greensburg, Pennsylvania

"...the more I think of your method of advertising and the way you conducted the sale, is all the more reason, I understand why the end answer was so good. ...and I want you to know I am very grateful to you and your company for the splendid performance and its wonderful outcome."

Lloyd K. Jones
Jones Construction Company
Emporia, Kansas

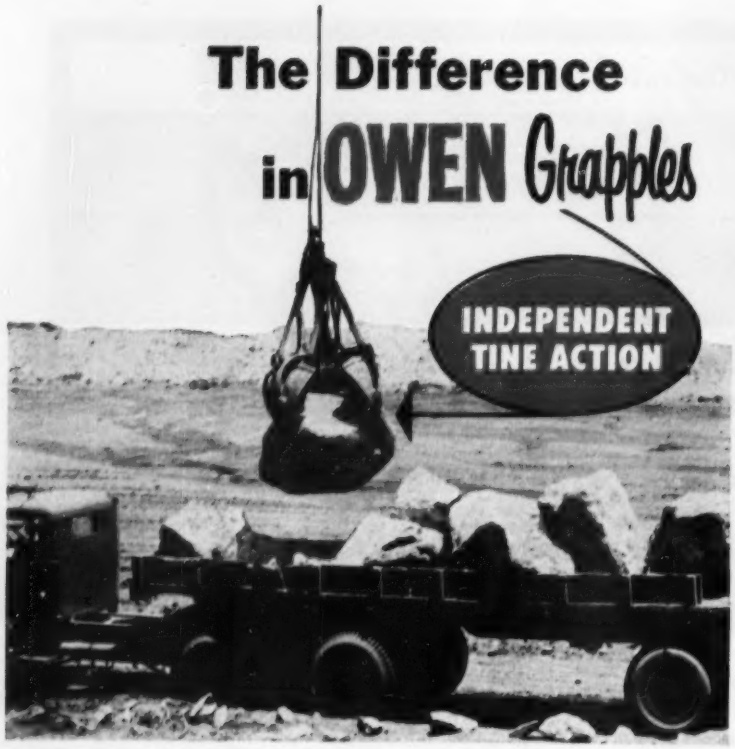
- FORKE BROTHERS conduct Auctions all over the United States and in Canada.
- FORKE BROTHERS have been in the professional Auction Business for over 34 years.
- FORKE BROTHERS **KNOW** the Equipment Market — how to reach it and how to sell it.

Before you sell your equipment, find out how you can sell ALL of it — the small pieces as well as the large, quickly, easily, and get the most total money for all of it.

Write today — or phone or wire collect — just ask for our "Plan of Auction." No obligation, of course.

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The Difference in OWEN Grapples



How can Owen Grapples *grasp* odd shaped stones and *hold* them securely under seemingly impossible conditions?

The answer is easy and logical...Owen is the *only grapple in which each tine operates independently.*

When power is applied all tines move toward the center. The one first meeting strong resistance grips and the others continue to move until each meets similar opposition. The result is tremendous gripping power and ability to grasp and hold objects regardless of their unusual shapes.

Send today for the Owen Rock Grapple Bulletin which explains this exclusive patented principle and illustrates many interesting handling operations.



"A mouthful at every bite"

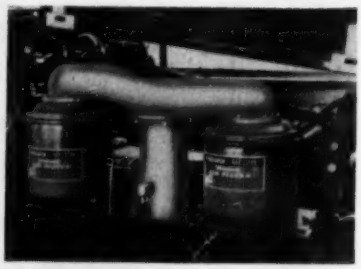
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DRY FILTER . . .

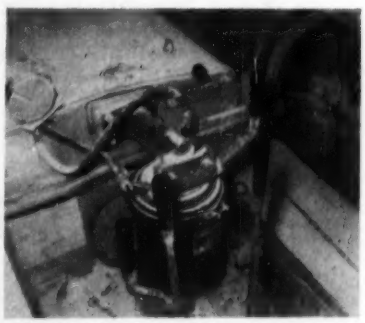
Continued from page 156



TYPICAL INSTALLATION of the Purolator AF-100 air filter dual-mounted on diesel engine of new truck tractor.

ticles of sub-micronic size under virtually all operating conditions. According to Purolator, the standard heavy-duty-type oil-bath filter at peak efficiency can remove from the air 97% of particles 5 microns or more in diameter when correct and frequent maintenance is provided.

The Micronic line is available as original or replacement equipment in three models:



THIS AIR FILTER mounted on a bulldozer working in a ship's hold actually removed 99.93% of bauxite particles from the air.

(1) The AF-100 manifold-mounted type for up-draft can be used on GMC's 503 gas engine and 4-71 and 6-71 diesels. It is intended for single-mounting on gas engines and dual- or triple-mounting on diesel engines.

(2) The AF-200 is of the hat-type for down-draft and generally is used on gas engines up to 150 hp. It gives an engine flow of 262 cu ft of air per min, with no horsepower loss.

(3) The AF-400 is of the outside cowl-mounted type and is usually single-mounted on gas or diesel engines up to 235 hp.

IN THE CRUSHED STONE INDUSTRY, TORRINGTON *Bearings are used in many applications including crushers, screens, shovels, cranes, pulverizers, grinding mills and rotary kilns.*



TORRINGTON Spherical Roller Bearings

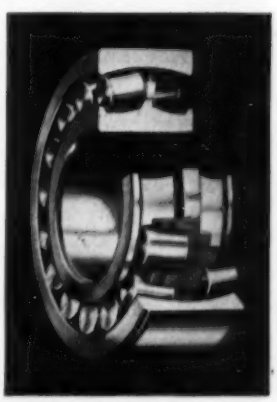
are manufactured with accurate geometrical conformity between races and rollers for ultimate capacity and performance.

Because conformity factors are uniformly high, rollers can operate with a minimum of friction and carry greater loads for a longer time.

There are other good reasons why TORRINGTON SPHERICAL ROLLER BEARINGS can guarantee superior performance. Races and rollers are precision ground to a high surface finish from the finest quality electric furnace steel available.

An integral center flange on the inner raceway gives positive radial and thrust stability against continuous high-speed, high-load conditions. Fully machined, cast-bronze, land-riding cages—one for each path of rollers—allow thorough lubrication, reduce wear and lengthen bearing life.

Specify dependable, rugged TORRINGTON SPHERICAL ROLLER BEARINGS in your equipment. They're available with either straight or tapered bore for shaft or adapter mounting.



THE TORRINGTON COMPANY
South Bend 21, Ind. • Torrington, Conn.

District Offices and Distributors in Principal Cities of United States and Canada

TORRINGTON SPHERICAL ROLLER BEARINGS

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers

Precast Units Frame Building

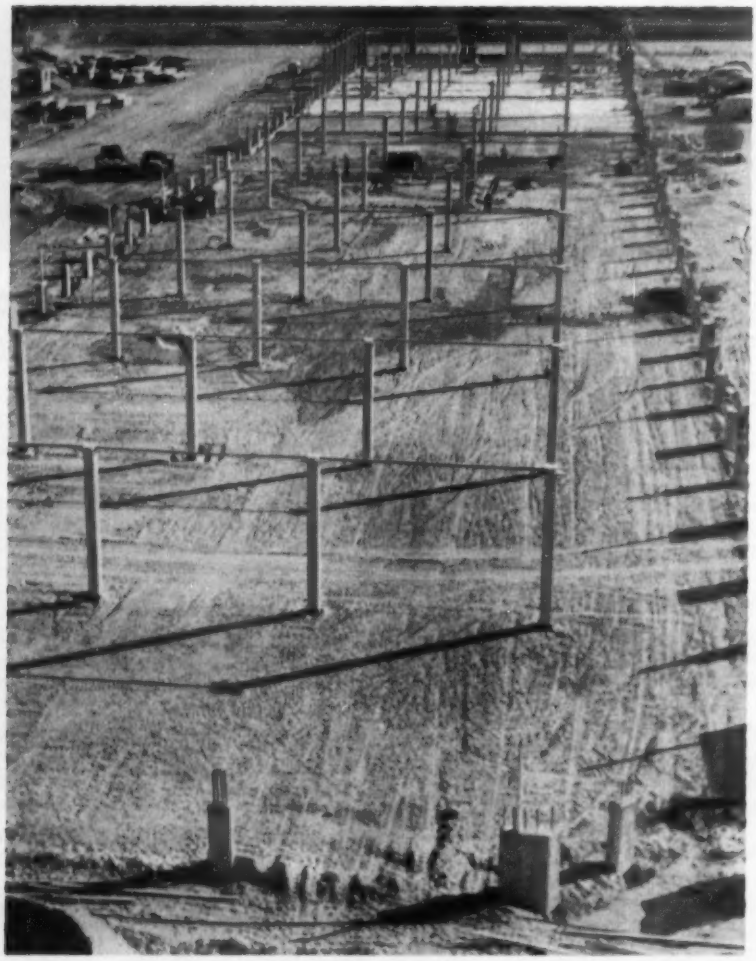
• **Prestressed concrete columns, beams and girders, cast at a central plant and trucked to the building site, featured the erection of a 600x120-ft shop building for the city light department in Tacoma, Wash. These structural items and precast concrete roof slabs were supplied by Concrete Engineering Co., and the contractor was the Roy T. Early Co., both of Tacoma. Column footings and exterior wall columns and beams were poured-in-place.**



1 EXCAVATIONS FOR FOOTINGS of columns being dug with a Lorain backhoe. Uniformity of many elements and large open area aided progress of construction.



2 COLUMN FOOTING BASE cast and ready to receive prestressed column. Base plate is set accurately to grade.



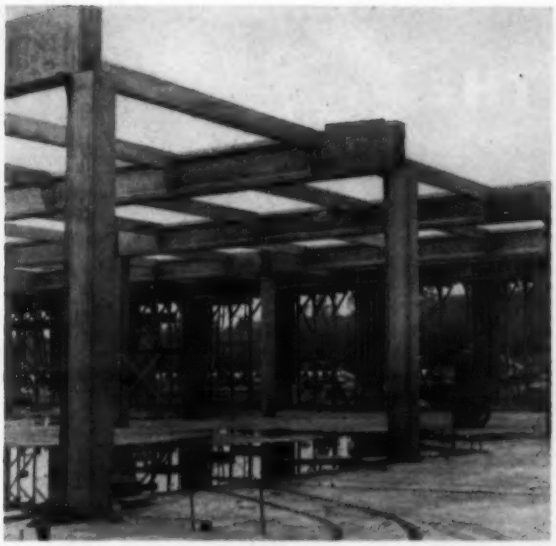


3 PRECAST CONCRETE COLUMN is spotted neatly on footing inside reinforcing steel, then concrete is poured around base.

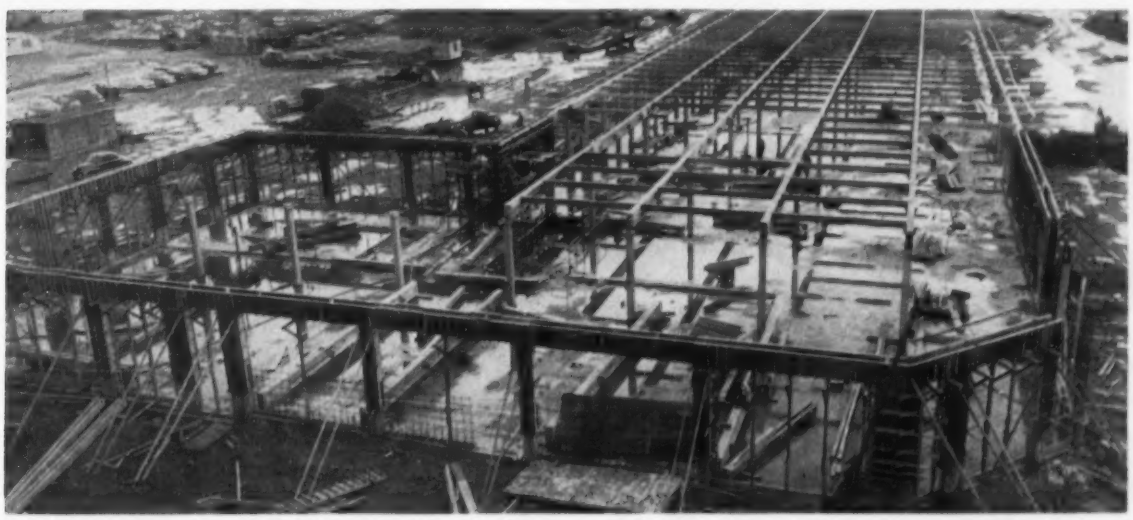
4 ALIGNED COLUMNS, all in place, await setting of girders. Outer wall footing piers are ready for column forms.



5 ERECTING a pre-tensioned girder with aid of long spreader bar. Reinforcing steel in background is for outer wall units.



6 FOLLOWING GIRDER ERECTION, 5x12-in. prestressed beams were set on the girder corbels and tied in to stiffen the frame.



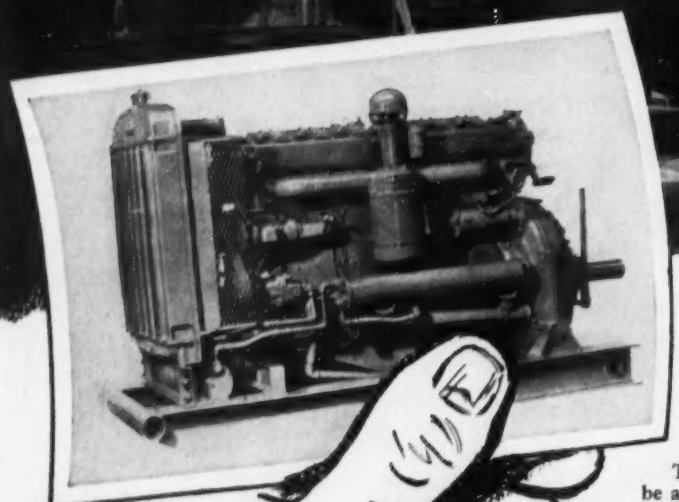
7 OVER-ALL VIEW showing positioning and alignment of prestressed girders and beams. Form panels and shores are in place for pouring of outer piers and girders. Reinforcing mesh and prefabricated wall form panels also are being placed.



8 LIGHTWEIGHT ROOF SLABS are lowered into place two-at-a-time across the structural frame. Slabs are 40 in. wide and 10 ft long, 1½ in. thick with a 6-in. leg. These, too, were precast to specification off-site and delivered by a supplier.

THE PICTURE ISN'T RIGHT...





until you put MURPHY DIESEL into it !

The best crushing plant in the world can't be any more efficient than its power plant. And that's why more and more aggregate producers are turning to Murphy Diesel Power. Heavy duty Murphy Diesels offer an exclusive combination of design features that make it possible for you to get more aggregate per dollar of power costs. With Murphy Diesel in the picture you get greater fuel economy, longer life and dependability unmatched by any other engine of comparable size. It all adds up to a prettier profit picture for you.

Murphy Diesel offers three types of power to best suit your needs—standard power units, electric generating sets and Mech-Elec Units which will supply both mechanical and electrical power separately or simultaneously. Ask your Murphy Diesel Dealer to give you complete information on the unit that will serve you best.

MURPHY DIESEL COMPANY

5339 W. Burnham St. Milwaukee 14, Wisconsin

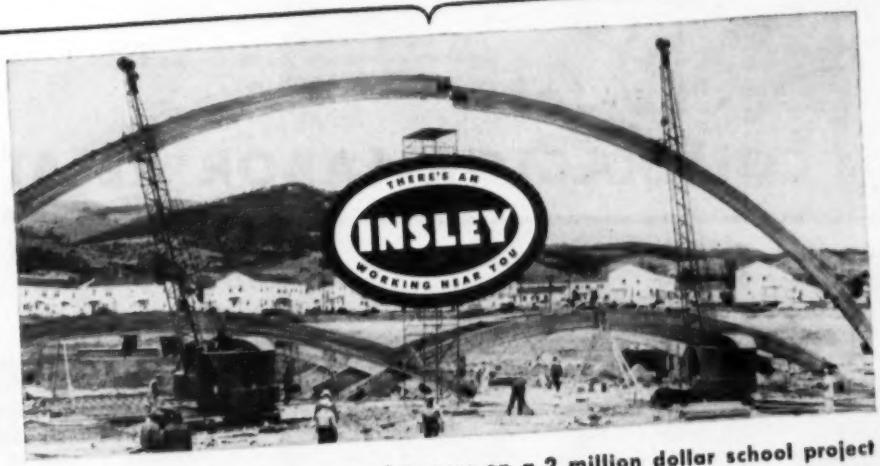
Sales, parts and service throughout the nation

MURPHY DIESEL

310

***Heavy duty power* for construction**

Murphy Diesel Engines and Power Units are available in sizes from 90 to 240 H.P. Engine speeds are 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 60 to 154 K.W.



Two INSLEY cranes setting wood trusses on a 2 million dollar school project

The excellent boom control and overall operating characteristics of the Insley crane are necessary for smooth accurate placement of these wood trusses into locking position. Let your Insley distributor show you "an Insley at work."

The Insley Manufacturing Corporation of Indianapolis has been manufacturing construction equipment since 1907. The Insley Line includes excavators and cranes, 5 to 30 ton capacity—rubber or crawler mounted—gasoline, diesel or electric power. There's an Insley working near you.

On-the-Job CONTRACTOR-LABOR RELATIONS

By LEON B. KROMER, JR.

Negotiations ... 1955

NOW IS THE TIME to start thinking about negotiations for this spring. If you are a member of a contractors' negotiating committee, your group should meet as soon as possible to prepare for negotiations. Too often contractors' committees walk into meetings with union committees without any preparation for what they will say, how they will counter union demands for contract changes—much less for submitting any proposals for agreement alterations themselves.

They are literally at the mercy of the union negotiators and, at best, can only develop rear-guard action; try to fend off the more onerous demands and to pare down the wage increase demanded. With a reasonably stabilized economy, extreme competition in bidding, and a definite falling off of construction volume in certain areas, the time for such careless and irresponsible negotiating has long since passed.

Your negotiating committee should meet several times before sitting down with the union negotiators. Before the contractor's committee gets together, each member should prepare his own "punch list"—and there isn't a contractor who doesn't know what one is like.

But this punch list should not pertain to work that must be corrected or done on a project before acceptance by the owner. It should list changes that you would like to see in the collective agreement; provisions of the current agreement that should be clarified; any that should be deleted. Often, because of ambiguous language in a contract clause, the steward or union representatives misinterpret it or extend its meaning beyond that originally intended. Example: A contract contained this clause:

> Journeymen and apprentices when needed for work shall receive at least one-half day's pay. If employment extends past the noon hour they shall receive a full day's pay.

During negotiations, it was clear that the intent was to guarantee a minimum of at least a half day's pay to a man coming to work on a job that would last 8 hr, or less. If the work was completed before the noon hour, the man would receive 4 hr's pay; if the work extended beyond noon he received a full day's pay. In writing out the agreement, the words "on jobs that will last 8 hr or less" were omitted. Use of the words "If employment extends past the noon hour . . ." would appear to convey the intent. Not so with union representatives. They have tried to use the clause to make contractors pay "four and eight" to men who have worked for a long period of

(Continued on page 169)



...with BUCK Heavy-Duty Hoisting Machine

Save profits for yourself. Instead of hiring four or five men to set up hoisting operations, use only *one* . . . and the BUCK Hoisting Machine.

BUCK erects itself, works itself, lowers itself . . . lifts full ton of materials to any desired level. Tower is self-erecting to 40 ft. unloading height . . . can be used with easy-to-add sections for greater height. Automatically retracting wheels eliminate heavy lifting, skidding and jacking. Self-dumping concrete bucket and Chicago boom available as accessories.

Get better acquainted with BUCK. Write for all the money-saving facts today.

Some desirable territories open to dealers . . . write for details.

BUCK EQUIPMENT CORP.
206 BUTLER ST., CINCINNATI 2, OHIO

NEW "KING-SIZE" CARTRIDGES SAVE TIME AND LABOR

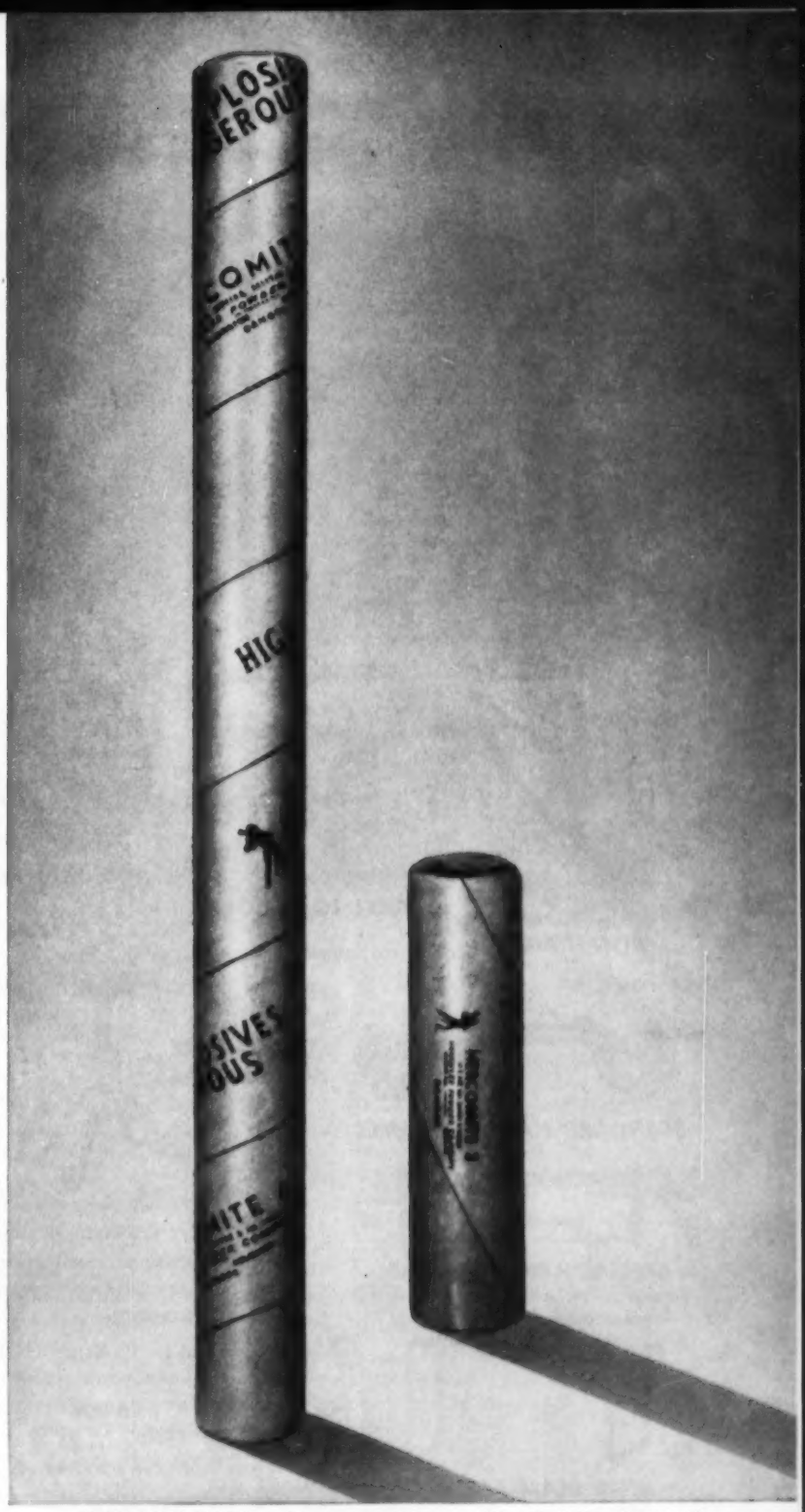
Now, Hercules produces "King-Size" cartridges in lengths of 24, 20, 16 and 12 inches, and in diameters of 1¼, 1½, 1¾, and 2 inches.

Available in all types of Hercules® dynamite, these long-length, small-diameter cartridges are now in full production.

"King-Size" cartridges make possible a more uniform fragmentation through the discharge of a single column of explosive. Their use means substantial savings in valuable time and labor in loading holes.

Hercules designed, tested, and installed special new packing machines for these "King-Size" cartridges.

Our technical service and sales representatives will be glad to discuss with you how these "King-Size" cartridges can go to work for you.



THREE TIMES AS LONG... Here is one of the new "King-Size" Hercules cartridges—24 inches in length, shown alongside the same grade in the conventional 8 inch size.

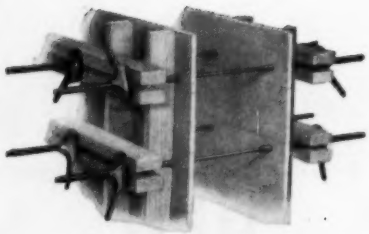
HERCULES

HERCULES POWDER COMPANY
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Explosives Department, 974 Market St., Wilmington, Del.

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N.Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

SUPERIOR

All the Accessories For Dependable Concrete Forming!





TILT LOCK CLAMPS



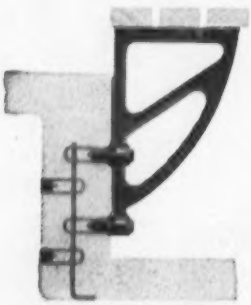
SNAP TIES



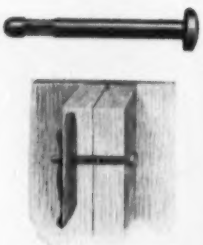
STANDARD COIL TIES



CONE-FAST COIL TIES



RISERFRAMES



PANEL LOCK BOLTS



ROD CLAMPS



COIL LOOPS



SCREW ANCHORS AND BOLTS



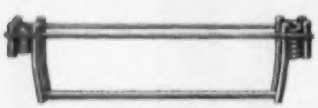
STANDARD HANGER FRAMES

ADJUSTABLE SCREED CHAIRS

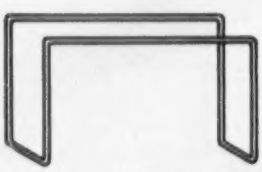




"PICK-UP" INSERTS FOR TILT-UP SLABS



SPECIAL HANGER FRAMES



WIRE BEAM SADDLES

Shown here are some of the many types of Form Ties, Anchors, and other concrete accessories which SUPERIOR'S years of engineering and field experience plus manufacturing dependability have developed and produced.

Every item in the SUPERIOR line is specifically designed to provide the most dependable and efficient forming method for ordinary foundations, engineering structures, watertight walls and architectural concrete.

When you plan form work, SUPERIOR'S experienced engineers are available to prepare suggested layouts of form work as well as complete estimates and quotations.

For details request copy of our COMPLETE CATALOG

SUPERIOR CONCRETE ACCESSORIES, INC.

4110 Wrightwood Avenue, Chicago 39, Illinois

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LABOR . . . Continued from page 166

time on the same project, when weather conditions require that work stop during the work day. When the contractors sit down with this union during the spring, Item No. 1 should be a clarification of this clause to prevent an extension of what was originally agreed upon.

At these preliminary meetings the contractors should build up their list of proposals to submit to the union committee when negotiations get under way. The proposals should make sense. Don't list something so extreme that it will be ridiculed. There will be a strong tendency to put all of your proposals in the same category.

Sometimes the union furnishes its list of changes prior to sitting down with the contractors' committee. You are then in a position to go over the proposals and decide what your position will be on each change. You may want to accept some, provided there is some modification of the language. Change the language yourself so that it can be offered as a counter proposal during negotiations. These preliminary meetings also provide a time when you and other contractors can exchange views on your experiences of "living with" the current agreement for the last year. Often such discussions result in practical suggestions on changes that should be made in the agreement.

Don't begrudge the time you must spend in preparing for negotiations or, if not on a committee, in helping others prepare to negotiate. It is an important part of your business and often the one that receives scant attention.

AFL-CIO Merger

What do the steps taken at Miami last month to effect the merger of the two great labor organizations mean to contractors? If you employ members of the AFL building trades, it probably means no change whatever. If however, your men are represented by the United Construction Workers, Local 50, United Mine Workers, it can mean a jurisdictional war over representation.

There is still a great deal that must be done before the merger becomes a fact. Agreement on paper means little if the major international unions on both sides don't agree to go along. Even so, the CIO never invaded the building construction industry. It has



The check he couldn't face

How the forged endorsement on a $73 check led us to discovery of a $6300 payroll fraud

(Based on Company File #117044)

One day recently, a former employee strode into our treasurer's office. Where was his vacation allowance money? He'd been waiting six months and hadn't received it.

We got out the records. All in order. Check issued . . . cashed . . . filed. We showed him his signature on the back of the check.

When he said that wasn't his writing, we called in the payroll supervisor, a man who'd been with us for years. Could he explain what had happened?

He couldn't. And he was so distressed by the situation that he collapsed and had to be sent home. We immediately began an investigation.

Our supervisor, we found, had been working a slick scheme. He was the one who had taken the check in question, forged the endorsement and pocketed the money. He'd diverted other checks, too. And for months he'd kept the names of many former employees on the regular payroll, and appropriated their "pay" as the checks were issued.

We determined that he'd stolen $6,323.94 before being tripped up. Fortunately, the entire loss was covered by our Hartford Blanket Fidelity Bond.

Protect *your* firm against the risk of financial loss caused by employee dishonesty. Get a Hartford Blanket Fidelity Bond. It covers all employees alike; there's no reason for any worker to feel that you're pointing a suspicious finger in his direction.

Your Hartford Accident and Indemnity Company Agent or your insurance broker will be glad to give you complete details of this essential protection. Call him—*now*.



Year in and year out you'll do well with the

Hartford

Hartford Fire Insurance Company
Hartford Accident and Indemnity Company
Hartford Live Stock Insurance Company
Citizens Insurance Company of New Jersey . . . *Hartford 15, Connecticut*
Northwestern Fire & Marine Insurance Company
Twin City Fire Insurance Company . . . *Minneapolis 2, Minnesota*



Even on the most out-of-the-way projects, liquids handling is no problem with the Bennett BIG G transfer pump. Its bronze automotive-type pistons do away with expander springs, leathers, diaphragms and other trouble-causing construction details. Because every stroke is a suction stroke, the BIG G delivers more gallons for less work. It's available for drum mounting or with tripod mount and suction hose intake – transfers up to 20 gallons per minute (based on 100 strokes) over lifts up to 20 feet. Special models available for hard to handle liquids. Ask your John Wood Representative for details, or write:

JOHN WOOD COMPANY
BENNETT PUMP DIVISION Muskegon, Michigan

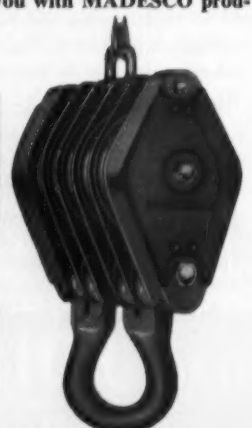
All Madesco Blocks Are Engineered to Serve Your Special Service Needs

FOR SAFE AND SPEEDY HOISTING

Heavy construction calls for heavy-duty blocks and MADESCO blocks combine the performance features developed through 30 years of specialized engineering for the construction field. Heavy steel shells and fittings, heavy iron or steel graphite-bronze, self lubricating sheaves are grooved to give you the maximum return for your rope investment. Sheaves equipped with bronze or anti-friction bearings for easy operation and long service.

Our special service departments will help you with their recommendations. Write for our catalog or consult your equipment dealer who can supply you with MADESCO products.

MADESCO BLOCKS



MADESCO TACKLE BLOCK CO., EASTON, PA.
A Subsidiary of Nazareth Cement Company

HAE-MB-104,55

been successful in drives to organize plant maintenance workers along with the production workers and has run head-on into the building trades unions.

Merger will not change your hiring practices, method of negotiating area agreements with the individual trades, or present procedures for settling jurisdictional disputes over work assignment.

Building Trades Officials Meeting

Officials of all major building trades unions are now meeting in Washington to discuss ways and means of obtaining revisions in Taft-Hartley to make it possible to comply with its provisions relating to representation elections, collective bargaining. One proposal, with strong adherents, provides for an entirely new law to cover the construction industry which would be exempt from the present Act. Supporters point to the Railway Labor Act as a precedent that has worked many years.

Armored Euc Cabs Save Operators Lives

During the past years, a number of operators of earth-moving equipment have lost their lives when their vehicles upset or jackknifed.

According to an item in the National Safety Council's Construction Section Newsletter, the contractor for the main embankment of the Garrison Dam, the PK-MK Company, decided not to have such accidents on this project. His order for 72 of the largest Euclids ever built specified that they be equipped with cabs built out of boiler plate. These Euclids have been used for five seasons, hauled approximately 55 million yd of dirt and gravel without serious injury to an operator.

It is estimated that the cabs have saved the lives of at least 12 operators during this period. The cabs built of boiler plate cost $150 more each than the standard cabs built by Euclid Co. The contractor feels that the cabs have paid for themselves many times over in the saving of lives on this project with many years of safe and productive service ahead of them.

HOW TO BUY RUBBER HOSE

FOR EASY HANDLING ON TOUGH JOBS . . .

and get "More Use per Dollar"

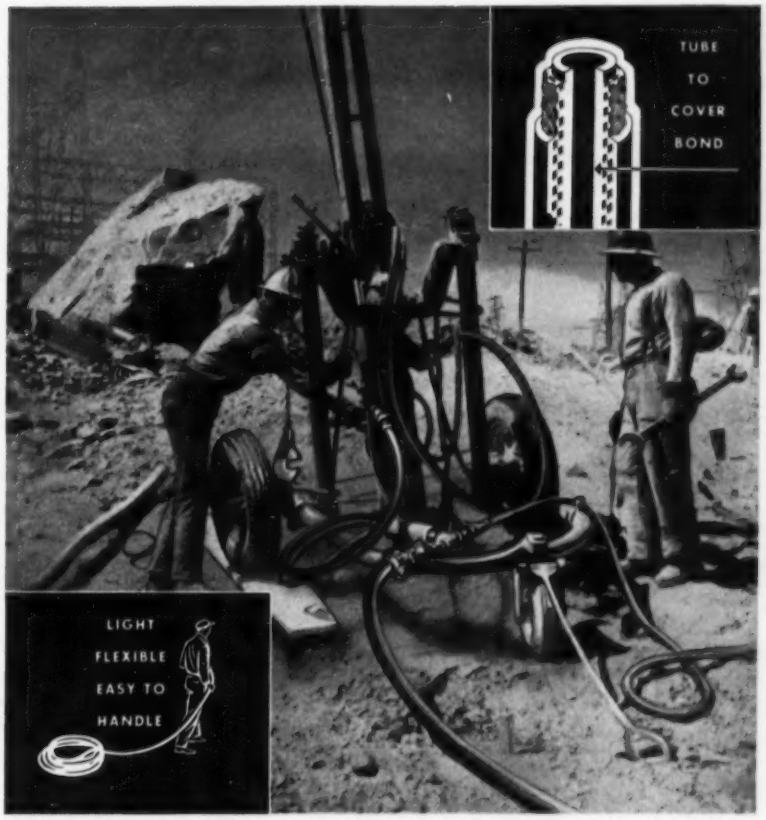
Select a light weight hose construction that is flexible and kink resistant for long-life dependability.

Hose that is light in weight—yet strong enough to safely withstand high pressures—is easier to handle. Men like it better and do more work with it. Look for a hose that is light, yet strong, for ease of handling.

If the hose you buy resists kinking you are assured maximum flow under all operating conditions. Hose that is mandrel-made, rather than molded in a pre-set coil, will coil and uncoil freely in any direction . . . eliminate points of strain at kinking points that can cause costly internal damage and rupture.

Make certain the hose is engineered for maximum flexibility . . . from tube to cover. Tube-to-cover flexibility prevents separation of cover, tube or strength member plies . . . reduces hose costs by increasing hose life.

Specify the one hose that gives you all these features . . . specify R/M Homoflex Hose.



HOMOFLEX HOSE

The unique construction of Homoflex Hose makes it easier to handle because it is light, has no pre-set twist . . . coils and uncoils easily without kinking. All unneeded bulk has been engineered out. An exclusive process creates a homogeneous cover, strength member and tube that are virtually inseparable to produce a hose construction that is extremely flexible, yet rugged and strong. Homoflex Hose does a better job under tough conditions . . . and it lasts longer. Inside and outside diameters are uniform.

Ask your R/M representative about types of Homoflex Hose for your operations. He can also tell you why other types of R/M Hose for general and special purposes last longer, too . . . give you "More Use per Dollar".

RM-555

MANHATTAN RUBBER DIVISION—PASSAIC, NEW JERSEY

RAYBESTOS-MANHATTAN, INC.



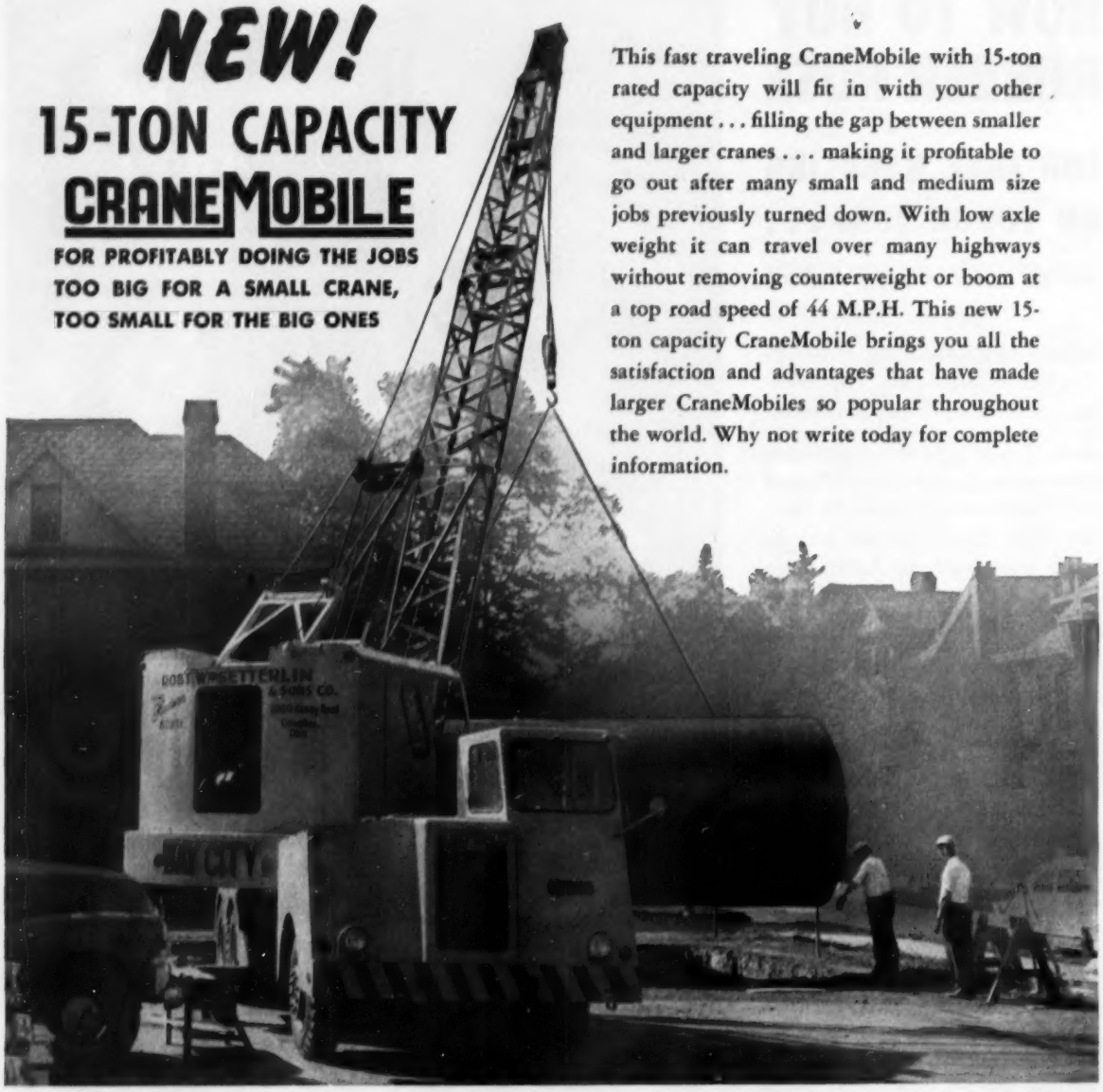
Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Packings • Engineered Plastic, and Sintered Metal Products • Bowling Balls

NEW!

15-TON CAPACITY CRANEMOBILE

FOR PROFITABLY DOING THE JOBS TOO BIG FOR A SMALL CRANE, TOO SMALL FOR THE BIG ONES

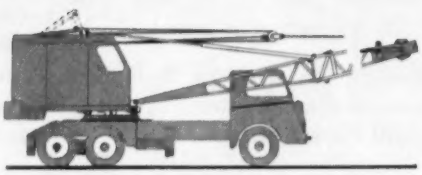
This fast traveling CraneMobile with 15-ton rated capacity will fit in with your other equipment . . . filling the gap between smaller and larger cranes . . . making it profitable to go out after many small and medium size jobs previously turned down. With low axle weight it can travel over many highways without removing counterweight or boom at a top road speed of 44 M.P.H. This new 15-ton capacity CraneMobile brings you all the satisfaction and advantages that have made larger CraneMobiles so popular throughout the world. Why not write today for complete information.



LOOK AT THESE OUTSTANDING ADVANTAGES

- Pin-connected boom for quick, easy changes
- Independent worm boom hoist with power-up and power-down
- Power booster clutches for easiest operation
- Tandem drums with large cable capacity
- Full length alloy steel cast base
- Large all-weather cab with ample headroom
- Hi-collapsible gantry with 11'-3" height
- Specially designed and BAY CITY built carrier with 182" wheelbase
- Low axle loads—15,850 pounds rear axles and 9800 pounds front axle with boom in traveling position
- Wide selection of speeds with 12 forward and 3 reverse — top road speed 44 M.P.H.
- Ample flotation with 10 — 10:00 x 20 — 12 ply heavy-duty mud and snow grip tires

250





BAY CITY SHOVELS, INC. • BAY CITY, MICHIGAN

BAY CITY

SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS

Jansen and Walsh Honored by Moles

MORE THAN 1,000 MOLES and their guests met at New York's Waldorf-Astoria last month to pay tribute to the 15th annual pair of Moles Award winners. They also heard a good-neighborly message on power and progress from Dr. Richard L. Hearn, chairman of the Hydro-Electric Power Commission of Ontario.

Carl B. Jansen of Pittsburgh, president of the Dravo Corp., was the non-member Award winner, and Thomas J. Walsh of Davenport, Iowa, board chairman of the Walsh Construction Co., received the member award. The presentation to Jansen was made by A. Holmes Crimmins, first vice-president of The Moles, reading a brief talk written by Enoch R. Needles, who was unable to make the presentation himself. The presentation to Tom Walsh was made by Admiral Ben Moreell.

Jansen has been president of Dravo since 1946. He has been with the company since his graduation, in 1922, from Union College in Schenectady as a civil engineer. He was born in Fonda, N. Y. In his acceptance talk he pointed to the great ultimate satisfactions to be gained in pursuing construction as a life work.

Walsh has been board chairman of the Walsh Company since 1946, and was president for 30 years before that. The company is one of the largest contracting firms, and has driven more tunnels than any other company in the world. Tom was born in Davenport in 1886 and was graduated from St. Mary's College in Kansas in 1907.

Famous Last Words...

(By L. H. Scott, Turner Construction Co.)



"WHO SAID THERE WERE NAILS AROUND HERE!"



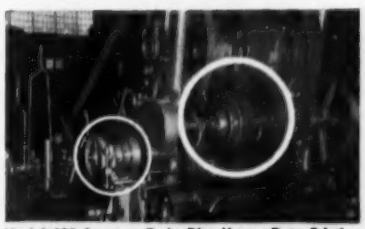
How fluid drives help make new General 320 Shovel a "hog" for yardage

Full-crowding power is designed into the new General Model 320 ¾-1 yard Shovel . . . for Osgood-General is offering a choice of Twin Disc *fluid drives.*

For operating conditions presenting extreme load demands, the new Model 320 is available with a Twin Disc 3-Stage Torque Converter, providing controlled torque multiplication.

For moderate load demands, the Twin Disc Fluid Power Take-Off is provided. With *either* drive, owners will have a "hog" for yardage . . . through cushioned power applied through fluid, eliminating mechanical connection. Work cycles are *faster,* productive output is *higher, without* engine lugging or cable-snapping. Add Twin Disc Friction Clutches as standard equipment on the Model 320's boom hoist, swing assembly, and for travel—and you have *engineered power linkage, with the right drives in the right places.*

Write Twin Disc today for Complete Line Bulletin No. 305.



Model 320 features Twin Disc Heavy-Duty Friction Clutches for swing and travel, boom hoist and lower, retraction, and power take-off.



Model CF Torque Converter (shown) on diesel-powered Model 320. Fluid Power Take-Off also available.

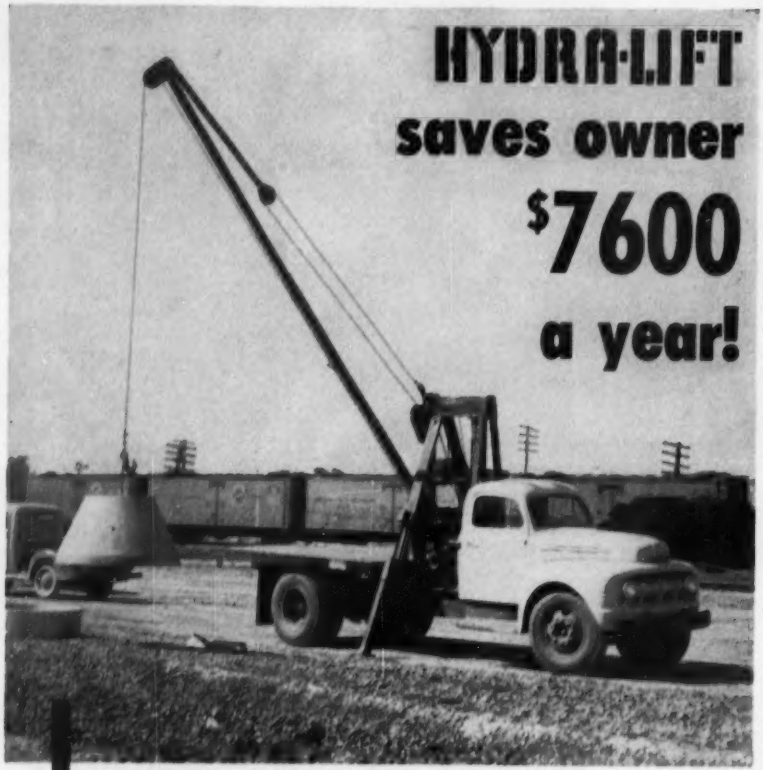
TWIN DISC

TWIN DISC

Friction Clutches and Fluid Drives

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin . HYDRAULIC DIVISION: Rockford, Illinois

Branches or Sales Engineering Offices: Cleveland • Dallas • Detroit • Los Angeles • Newark • New Orleans • Seattle • Tulsa



An owner in Pennsylvania has reported his Hydra-Lift is saving him $7,600 a year . . . in labor costs alone. That's far more than the original cost of the Hydra-Lift itself. Other owners have reported their Hydra-Lifts are saving them as much as $100 a day, at the peak of their work seasons.

Hydra-Lift is the revolutionary new truck crane that lifts up to 6,400 lbs., yet requires only 40" behind the cab of your truck. You can still use your truck for hauling purposes. Hydraulic power swings the boom 180°, lifts it through an arc of 100°. Pipe, poles, steel, stone, precast concrete . . . Hydra-Lift handles these materials, and dozens of others, much faster than an A-frame, far more economically than hand labor or larger, more expensive cranes.

Perhaps a Hydra-Lift can save you $7,600 a year, or more. Why not get all the details . . . today. There's no cost, no obligation, and it might save you thousands of dollars the coming season.

GET ALL THE FACTS! FILL OUT AND MAIL THIS COUPON TODAY!

Hydra-Lift is Manufactured by Pitman Mfg. Co., 300 W. 79th Terrace, Kansas City, Mo. Also Manufacturers of the Pitman Crane Model 80, 4-ton Truck Crane, and the Pitman Giraffe, Aerial Platform.

PITMAN MFG. CO.
300 W. 79th Terrace
Kansas City, Missouri

Please send me full details on the new Pitman Hydra-Lift

Name_____

Company_____

Street_____

City_____ State_____

SALES AND ★ SERVICE ★

News of manufacturers' activities designed to assist the reader in the purchase of machinery, equipment and materials and help him obtain quick service on parts and maintenance.

Distributor Appointments

Bucyrus-Erie Co.: Its new distributor for the central Tennessee territory is Euclid-Tennessee, Inc., Nashville, which offers sales and service on the firm's full line of ⅜- to 4-yd convertible excavators and cranes, equipped with gasoline, diesel, or single-motor electric power units; 15- and 25-ton capacity Transit cranes; truck-mounted all-hydraulic Hydrocrane and Hydrohoe, and Red Arch dragline buckets. For northwestern Ontario Bucyrus Erie has appointed W. H. Marr, Ltd. of Kenora, Ontario, to handle its products.

Buck Equipment Corp.: Announces the appointment of the Builders Rental Equipment Co. Inc., as an authorized dealer in the Erie, Pa. area for the sale and service of both truck- and trailer-mounted models of Buck hoisting machines. General manager of the Erie office is Ray Bloomquist.

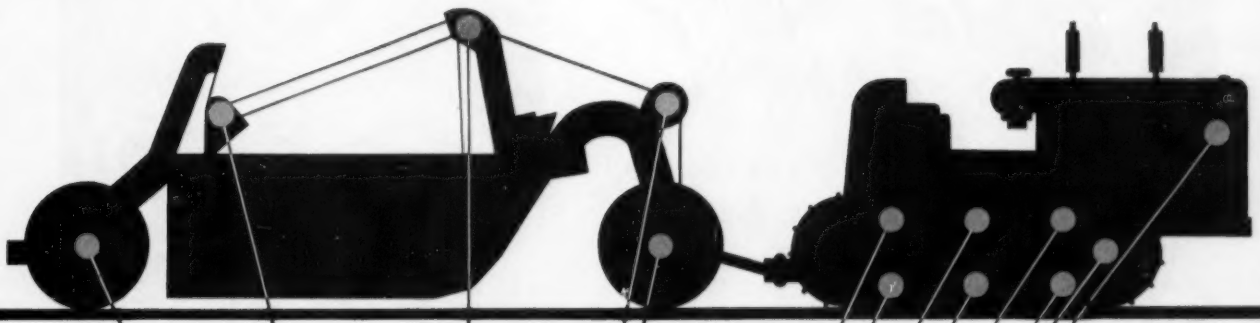
Wayne Crane Shovel and Crane Div., American Steel Dredge Co., Inc.: Four new distributors for the Wayne line of ½- and ¾-yd crane-excavators and their territories are as follows: Dravo-Doyle Co., Pittsburgh, Pa. (western Pennsylvania, Panhandle of West Virginia); Cary Hall Machinery Co., Inc., Salem, Va. (State of Virginia); Industrial and Farm Equipment Corp., Baltimore, (State of Maryland, Kent and Sussex Counties, Delaware; Washington, D.C.) George P. Williams Co., Cleveland, (northeastern Ohio).

International Harvester Co.: MW Construction Equipment Div., Metalweld Inc.; of Philadelphia, has been appointed exclusive distributor to sell and service industrial crawler tractors, motor scrapers, dozers, loaders and wheel tractors in Eastern Pennsylvania, Southern New Jersey and northern Delaware.

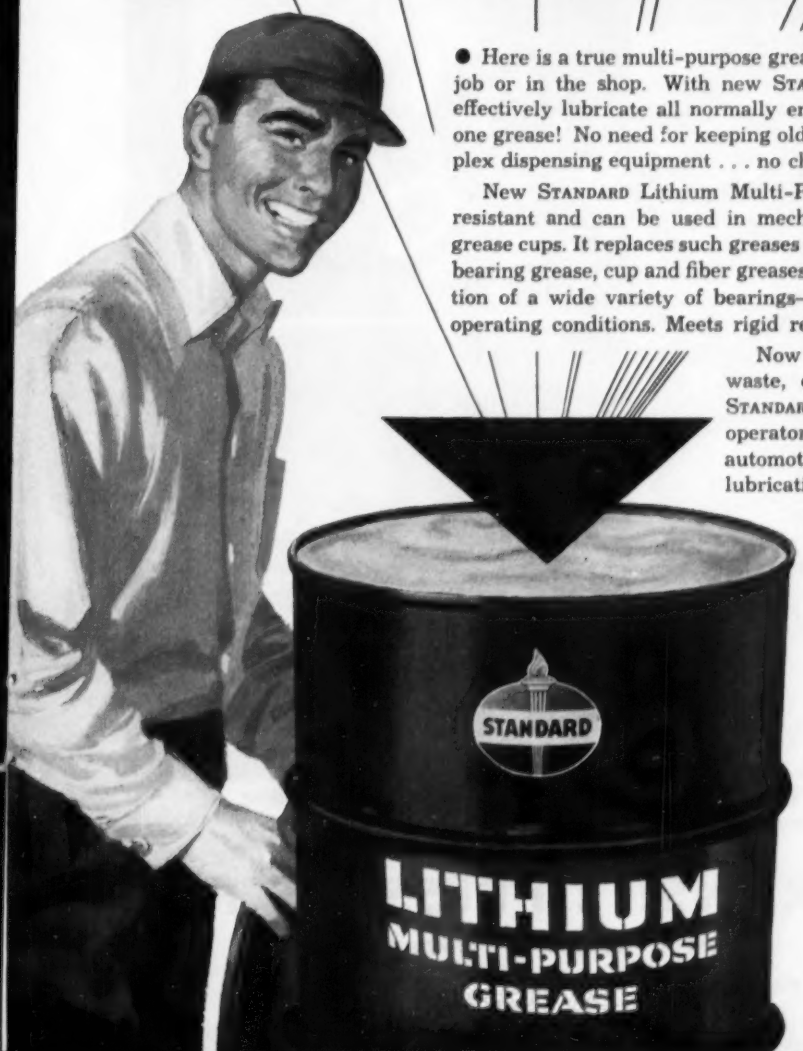
Chain Belt Co.: Riney-Ryan Tractor Co., St. Louis, has been appointed distributor of Rex construction machinery in the following areas: In Illinois, all counties south of and including Calhoun, Jersey, Madison, Bond, Fayette, Effingham, Jasper, and Crawford. In Missouri east of and including the counties of Schuyler, Scotland, Knox, Shelby, Monroe, Audrain, Callaway, Osage, Pulaski, Texas and Howell.

(Continued on page 178)

now 1 grease replaces 7



NEW STANDARD LITHIUM MULTI-PURPOSE GREASE



● Here is a true multi-purpose grease that can be *used practically anywhere* on the job or in the shop. With new STANDARD Lithium Multi-Purpose Grease you can effectively lubricate all normally encountered grease-lubricated bearings with just one grease! No need for keeping old-fashioned special-grease inventories with complex dispensing equipment . . . no chance of costly application mistakes.

New STANDARD Lithium Multi-Purpose Grease is water and high-temperature resistant and can be used in mechanically and hand-operated dispensers and in grease cups. It replaces such greases as viscous lubricants, water pump grease, wheel-bearing grease, cup and fiber greases and can be used for general chassis and lubrication of a wide variety of bearings—ball, roller, plain, needle—under wet and hot operating conditions. Meets rigid requirements of wheel bearing manufacturers.

Now you can reduce grease inventories, eliminate waste, do away with costly application errors with STANDARD Lithium Multi-Purpose Grease. Ideal for fleet operators, contractors, other large-scale users of heavy automotive equipment. Call your nearby Standard Oil lubrication specialist now.

STANDARD

STANDARD OIL COMPANY *(Indiana)*

IN WATER SYSTEMS

Installed cost plus performance is what counts!

That's why it pays to use Transite® Pressure Pipe with the Ring-Tite® Coupling

FOR THE contractor who installs it . . . for the engineer who selects it . . . for the taxpayer who pays for it . . . Transite Pressure Pipe with the new Ring-Tite Coupling meets every requirement. For example . . .

Installed Cost is Lower—Contractors everywhere have found that Transite's light weight, easy handling and fast, accurate Ring-Tite Coupling simplify assembly and save time. May be installed even under difficult weather and terrain conditions. The Ring-Tite design automatically locks tight, forming a positive seal.

Performance is Higher—With Transite Pressure Pipe and the Ring-Tite Coupling, you can count on peak performance year after year because of such engineering advantages as these: *Lasting* strength because of Transite's asbestos-cement, a strong durable material, highly resistant to corrosion . . . *Designed* tightness with the rubber rings of the Ring-Tite Coupling . . . *Assured* flexibility with automatic end positioning within the joint . . . *Locked in the groove* . . . rings can't blow out.







For further information about Transite Pressure Pipe and Ring-Tite Coupling, write to Johns-Manville, Box 60, New York 16, N. Y.

JM PRODUCTS

Johns-Manville TRANSITE PRESSURE PIPE

WITH NEW RING-TITE COUPLING



Wire Rope at Work—Here's an interesting operation that took place during construction of the Queens Welfare Island lift bridge crossing a portion of New York's East River. The giant sheave, weighing 37 tons, is one of a pair in the 170-ft tower at the east end of the bridge. A similar pair were placed in the west tower. Big 2⅜-in. Bethlehem wire ropes operate over these sheaves, providing links between the ends of the lift span and the counterweights.

The hoisting of the sheaves was no small job, but it was handled smoothly and without mishap by the erection contractor, Harris Structural Steel Company. This, like the operation of the span, is a type of work for which Bethlehem rope is ideally suited, for there is no more dependable cable made anywhere.

Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:

CONSTRUCTION • MINING • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING







SALES AND SERVICE . . .

Continued from page 174

Construction Equipment Div. Baldwin - Lima - Hamilton Corp.: Announces the appointment of N. C. Ribble Co., Albuquerque, N.M. as distributor for Lima shovels, cranes, draglines and pull shovels. Territory covers all of New Mexico, excepting the seven extreme border counties.

Madsen Co.: This company's line of asphalt paving plants has been acquired by Allied Equipment Corp. Carnegie, Pa. which plans to sell and service them in the Tri-State road-building program.

Koehring Co.: Foster - Bell Co., Sioux Falls, S.D., has been named to handle the complete line of Koehring heavy-duty equipment, including excavators, cranes, draglines Dumptors, pavers, finishers Mud-Jacks and construction mixers. This company will also handle the products of three of Koehring subsidiaries: C. S. Johnson, Parsons and Kwik-Mix. Main office is in Sioux Falls, with a branch in Aberdeen, S.D.

Euclid Div., General Motors Corp.: Has appointed Min-A-Con Equipment Co., of Phoenix Ariz., as distributor to sell and service their entire line of rear-dump and bottom-dump units, scrapers and crawler tractors, together with their loaders and other Euclid-designed accessories and equipment. L. W. Beck is president and general manager of this newly formed construction equipment distributing business.

On the Sales Front

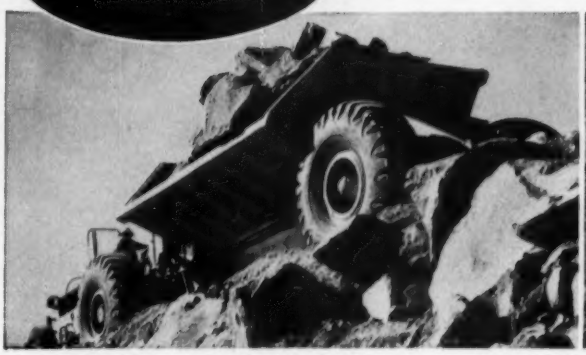
Koehring Co.: D. C. Kilpatrick has been appointed district representative for North and South Dakota, Montana, Nebraska, Iowa, Minnesota, Kansas and Western Missouri, in addition to the Canadian provinces of Alberta, Saskatchewan and Manitoba. He also will represent Koehring's three subsidiary firms, Parsons Co. of Newton, Iowa, C. S. Johnson Co. of Champaign, Ill., and Kwik-Mix Co. of Port Washington, Wis. Also appointed was John E. Mahoney, Jr., as district representative for the company's South Atlantic territory, which includes Alabama, Florida, Georgia, North and South Carolina, Virginia and West Virginia.

LeRoi Div., Westinghouse Air Brake Co.; Paul D. Sullivan has been named assistant sales manager with headquarters in Milwaukee. He will be concerned primarily with promoting the sale of LeRoi portable air compressors and Westinghouse stationary air compressors.

Universal Atlas Cement Co.: Clayton

(Continued on page 181)

PROOF... OWNERS MAKE MONEY WITH ATHEY PD20 TRAILERS



TORQUE AND TWIST MINIMIZED! Tractor-trailer has articulate action minimizing roading shocks — improves riding qualities at maximum travel speeds. Use of high-strength steel eliminates useless dead weight.



SAFE HAULS AT 34 MPH! Matched design of the Cat DW20 and Athey PD20 permits use of highest tractor speeds. Low center of gravity, excellent visibility and large air-brakes insure safety.



HEAPED LOADS IN A HURRY! High shovel efficiency is obtained with the low, wide body which takes a 25 cu. yd. or 30 ton load. Body designed to take maximum heaped load.



LESS FILL MAINTENANCE! PD20 loads are cast over the edge of the dump, building the fill in even, compacted lifts and without auxiliary 'dozers.



NON-STOP CYCLES! The PD20 dumps to the side without stopping. Dumps are made in 20-30 seconds instead of 60-120 seconds. Material is cast over the edge of the fill.

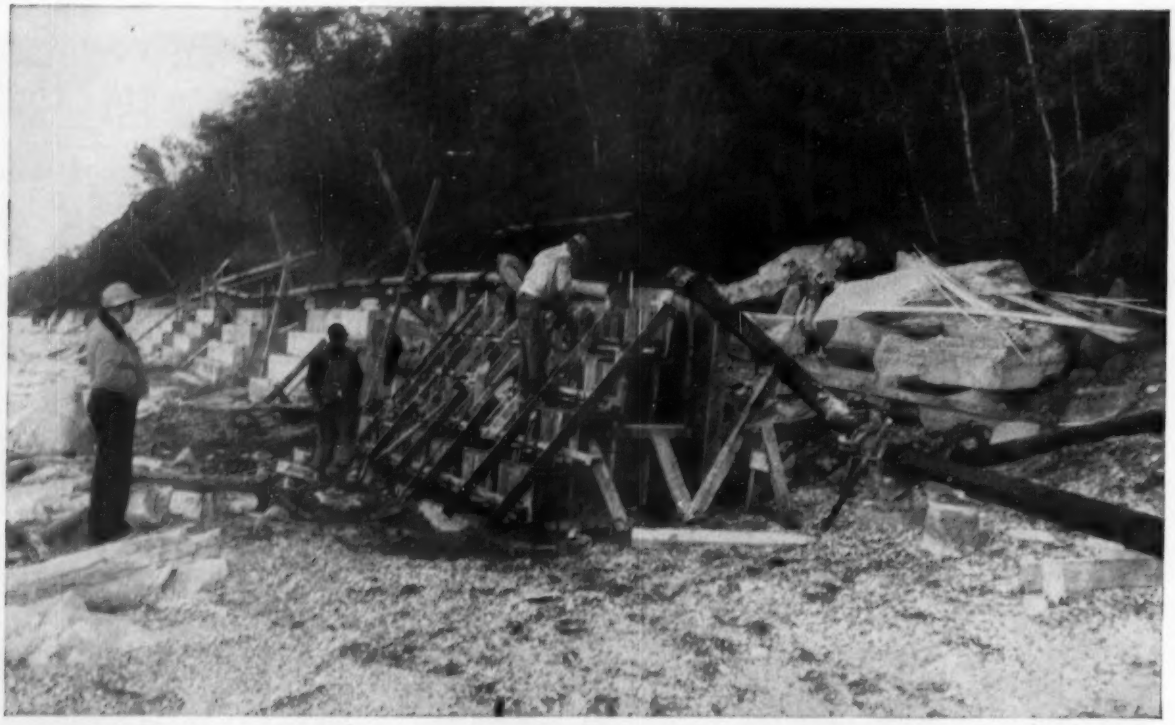
MORE PROOF

GET THIS NEW PD20 CATALOG!



More profit-making features are described and pictured in this colorful new catalog on the Athey PD20 Side Dump Trailer. Your Athey-Caterpillar Dealer has a copy for you and can show how each of the features can earn money for you. Ask him for your copy or write direct to Athey Products Corporation.

5631 West 65th Street, Chicago 38, Illinois, U.S.A. **ATHEY PRODUCTS CORPORATION**



Laborers puddle and vibrate concrete with plenty of time to handle the pipe. Note pipeline lying above form for direct delivery of concrete and minimum pipe handling.



Pumpcrete was located 300 feet from work area, most convenient to truck mixer delivery.



Pipeline laying was simple through dense foliage on 30-degree slope.

PUMPCRETE® Saves 20% over original estimate on Lake Michigan retaining wall

Milwaukee contractor, Robert C. Tubesing saved 20% of original estimate on 500-foot retaining wall at the foot of Lake Michigan bluff, with rented Pumpcrete.

The 160 Single Pumpcrete was located just off the street convenient to truck mixers at the top of the bluff...300 feet from the work area. Trucks were able to get in and out easily, deliver their loads fast and keep work on schedule.

Contractor Tubesing reported laying the pipeline down the 30-degree wooded slope was simple and inexpensive compared to access roads or chuting system. He also stated the unsegregated 2-inch to 3-inch slump delivered by Pumpcrete was far better than could have been expected by chutes.

Concrete placing on this job could only be done when offshore winds freed the work area of water. Concrete was placed in the 15- to 30-foot forms at the rate of 12-18 cubic yards per hour with a minimum crew—operator, working foreman and two laborers.

Why not consider the fast, cost-cutting possibilities of Pumpcrete for your next job? See your local Rex Distributor or write: Chain Belt Company, 4664 W. Greenfield Ave., Milwaukee 1, Wisconsin.

CONSTRUCTION REX® MACHINERY



CHAIN BELT COMPANY

SALES AND SERVICE . . .

Continued from page 178

L. Davis has been appointed technical service director of this United States Steel Corp. subsidiary, succeeding Earl R. Bryant who died recently.

Electric Steel Foundry Co.: Fred J. Acord has been appointed to serve the Middle Atlantic territory, contacting the company's construction dealers under the Esco New York branch. His headquarters will be in Baltimore, Md.

Blaw-Knox Co.: The new sales manager and chief product engineer of the Steel Forms Department, Blaw-Knox Equipment Division, is J. P. (Pete) Cerutti. A. Francis Sarosdy has been promoted to assistant chief product engineer. C. W. (Curt) McIntyre is the new manager of the Parts and Services Department which has been relocated at Mattoon, Ill.

Galion Allsteel Body Co.: Frank L. Hamilton has been appointed regional manager in charge of the Michigan, Ohio, Western Pennsylvania, Kentucky and West Virginia territory, supervising sales of Galion Allsteel dump bodies and hydraulic hoists of 3- to 27-ton capacities, Load-evator rear-end truck loaders and E-Z Pack refuse collection bodies. His headquarters will be in Toledo, Ohio.

Austin Div., Central Ohio Steel Products Co.; M. B. (Jack) Crowley is the new eastern regional sales manager, responsible for sales development of Austin Overshot Loaders in the states east of the Mississippi River, with headquarters in Galion, Ohio.

McKiernan-Terry Corp.: G. Robert Compton, Jr., has been appointed manager of the Pile Hammer Division, Sales and Service, succeeding Earle R. Evans who died recently. Mr. Compton's headquarters will be in Dover, N.J., from which he will have charge of the New York sales office and the company's pile-hammer representatives.

MacWhyte Co.: Francis D. Holden has been appointed manager of sales, having been promoted from assistant general sales manager, a position which he held since 1948. Mr. Holden has had more than 20 years' experience with the MacWhyte Co. general sales and export divisions.

Medusa Portland Cement Co.: Robert A. Marshall has been promoted to assistant vice-president and assistant general sales manager, having spent a year in an administrative position in the sales department of the company. His headquarters will be in Cleveland, Ohio.

THRIVES ON AIR and WATER



When you need large capacity lines to handle air or water on construction jobs, you'll find your best bet is Naylor lightweight pipe. Top performance in either service is built into this distinctive pipe through features not combined in any other light weight pipe.

The lockseam spiralweld structure provides light weight without sacrifice of strength, assuring easier handling and installation. Extra safety is provided by the reinforced spiral truss which acts as a continuous expansion joint to absorb shock loads, stresses and strains, and affords greater collapse strength when lines are operated under vacuum.

For the complete story, write for Bulletin No. 507 covering the complete range of Naylor pipe sizes from 4" to 30" in diameter.

NAYLOR PIPE

NAYLOR PIPE COMPANY

1268 East 92nd Street, Chicago 19, Illinois

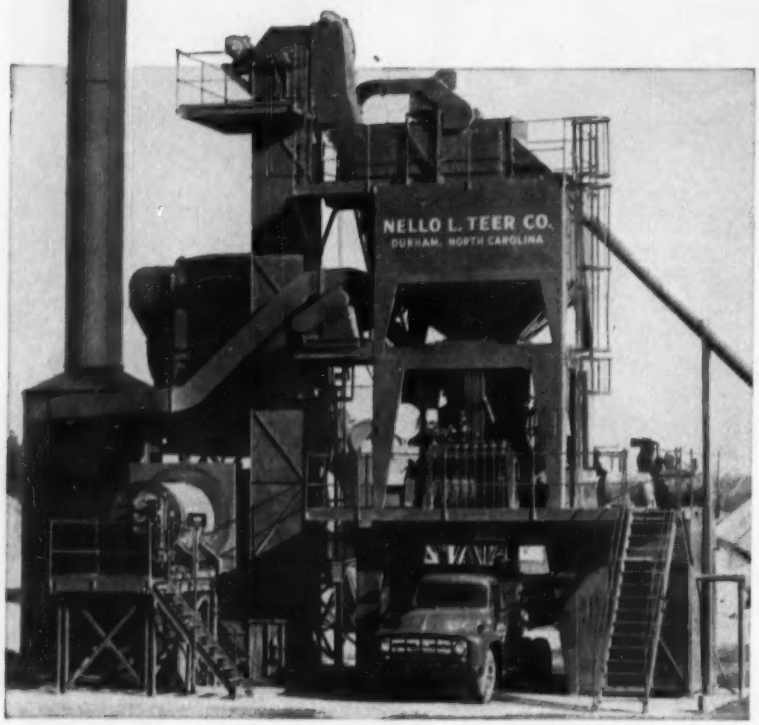
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Another H&B TYPE "T" BATCH MIX ASPHALT PLANT

● Shown here is the new H&B Type "T" batch mix asphalt plant of the Nello L. Teer Co , Contractors, of Durham, N. C. This plant has a fugitive dust collection system on the hot elevator, screen, weighbox and mixer, with its own exhauster operating entirely separately from the dryer collecting system. A properly designed duct system and individual dampers on each branch assure balanced operation. This fugitive dust collection system is optional equipment on Type "T" plants.

H&B Type "T" plants are available in four sizes, with capacities from 60 to 180 tons per hour. Special engineering service available for planning special installations when standard size plants will not meet the requirements of your job.

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SALES AND SERVICE . . .

Continued

In the Main Office

Mack Trucks, Inc.: Election of P. O. Peterson as president and chief executive has been announced by the Board of Directors. E. D. Bransome, former president and chairman of the Board, will continue as Chairman after Mr. Peterson assumes his active duties as president.

Frank G. Hough Co.: Two promotions have been announced by this company: G. A. Gilbertson, formerly vice-president in charge of sales, advertising and service, has been made executive vice-president and general manager. R. L. Beyerstedt, formerly vice-president and chief engineer, is now executive vice-president in charge of engineering and product development.

Special Mention

Gardner Denver Co.: Managements of this company and of the Keller Tool Co., Grand Haven, Mich. have announced that the stockholders of both companies have approved a consolidation. Keller Tool Co. now becomes Keller Tool Division of Gardner-Denver Co. and will continue operations under the former Keller management. E. V. Erickson, president of the Keller Tool Co., has been elected an executive vice-president of Gardner-Denver Co. Gifford V. Leece remains president of Gardner-Denver.

Wire Reinforcement Institute: Edward M. Howard, former Asphalt Institute district engineer, has been named field engineer of this Institute. Working out of Springfield, Ill., Mr. Howard will represent the Institute and coordinate all its activities with state and city engineers who are constructing fabric reinforced asphalt concrete.

Aeroquip Corp.: Organization of a Canadian subsidiary, Prenco-Aeroquip, Ltd., has been announced by Matthew J. Betley, vice-president and general manager of the Corporation which produces flexible hose line, reusable fittings and self-sealing couplings for aircraft, industrial, automotive and farm uses. Prenco-Aeroquip, Ltd. has acquired all the assests of Prenco Progressive & Engineering Corp. of Toronto, Canada, relating to its flexible hose line and self-sealing coupling business. The new subsidiary will use the same quarters as Prenco until larger quarters are available.

Wooldridge Manufacturing Co.: Has become a division of Continental Copper & Steel Industries, Inc., New York. Plans include the establish-

AN OUTSTANDING NEW TEAM
for Ditching, Digging

INTRODUCING
the Allis-Chalmers WD-45 Wheel Tractor with Henry Backhoe



Whether it's digging ditches, trenches, culverts, footings or foundations, you'll find this team's power, mobility and versatility ideal for use on any dirt-moving job. Check the features that make this machine a big performer at low cost:

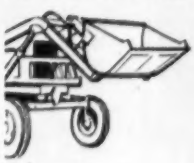
PLENTY OF POWER — for big-scale production. The WD-45 engine with POWER-CRATER design develops over 45 belt horsepower . . . to give you more power per dollar . . . more work capacity than other tractors of this type. Thousands already in use have given the WD-45 nationwide fame as a performance leader.

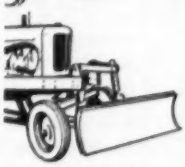
PLENTY OF WEIGHT — 5,325 lbs distributed right, give you the added traction and stability you need for tough, heavy digging and backfilling. It's a combination of a big, rugged wheel tractor and heavy-duty hoe to give years of continuous service.

MANY OPERATING FEATURES — let the operator do an efficient, thorough job in less time. With two-clutch control, the operator saves time because he can keep tractor in low gear while digging — can start and stop it on short moves with easy-to-reach hand clutch. The bucket, working like a giant hand, reaches out 12 ft, 8 in . . . digs 8 ft down . . . swings 160 degrees for wide area dumping. Backhoe assembly is all-steel, box-channel construction to take rough, hard use.

MANY SERVICE ADVANTAGES — will save you money. Engine features like exhaust valve rotators, removable cylinder liners, pressure lubrication give long life and lasting performance. Backhoe features, like replaceable bushings on all wear points, provide easy maintenance.

PLENTY OF VERSATILITY — keeps the WD-45 with backhoe busy all the time. The unit is mobile enough to reach any job, especially the hard-to-get-to places. With power-shift rear wheels, the tread can be adjusted in less than five minutes when extra stability is needed. Choose from six interchangeable buckets, 16 to 24-inch widths. Front-end loader and backfill blade attachments are available as optional equipment.





See the world-famous WD-45 with Henry Backhoe at your Allis-Chalmers industrial dealer, or write direct to the company for literature.

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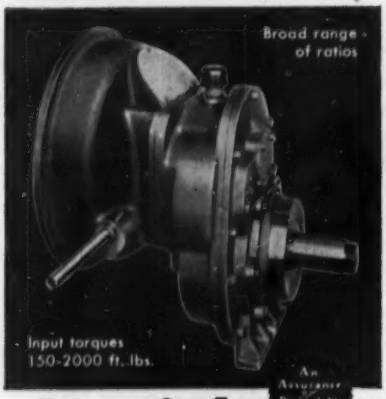
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SALES AND SERVICE . . .
Continued

ment of Eastern manufacturing and parts service facilities and immediate production of additional new models of Wooldridge earthmoving equipment.

Allis-Chalmers Manufacturing Co.: Has acquired the Baker Manufacturing Co. of Springfield, Ill. Baker manufactures a line of construction equipment attachments for crawler tractors.

The Baldwin-Lima-Hamilton Corp.: Has acquired ownership of the Madsen Iron Works, Inc. Los Angeles, Calif., Madsen has manufactured heavy road construction machinery for 45 yr.

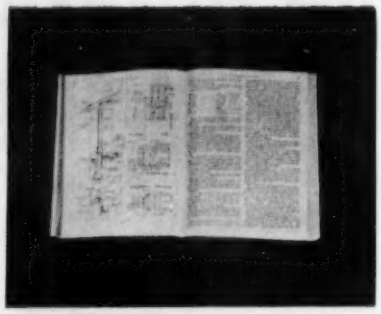
Association Activities

National Constructors Association: T. C. Williams, executive vice-president, Stone & Webster Engineering Corp., Boston, was elected president, succeeding John F. O'Connell, vice-president, The Bechtel Corp., San Francisco. C. D. Haxby, vice-president, The Rust Engineering Co. Pittsburgh, was elected vice-president of the Association; C. B. Bronson was reelected secretary-treasurer.

Pipe Line Contractors Association: Officers for 1955 are: H. C. Price, H. C. Price Co. Bartlesville, Okla., president; C. C. Bledsoe, Midwestern Constructors Inc., Tulsa, Okla., 1st vice-president; Earl Allen, Associated Pipe Line Contractors, Inc., Houston, 2nd vice-president; John H. Williams, Williams Bros. Co., Tulsa, Okla., treasurer; Richard A. Gump, Dallas, Tex., executive secretary.

Associated Equipment Distributors: Installation of 1955 officers of this Association was held at A.E.D.'s 36th Annual Meeting held in Chicago recently. They are Ray J. Finn, Bode-Finn Co., Cincinnati, president; S. F. Laskey, Northwestern Equipment Inc., Fargo, N.D. executive vice-president; L. Miner Doolen, Telford Equipment Co., Lansing, Mich., vice-president; H. D. Anderson, Rish Equipment Co., Bluefield, W. Va., vice-persident; M. F. Macdonald, F. H. Hopkins & Co., Ltd., Montreal, Quebec, Canada, vice-president and director of Region XV, Canada. F. J. Fitzpatrick, Parker-Danner Co., 25 Factory St., Hyde Park, Mass., treasurer.

The Associated General Contractors of America, Inc.: George C. Koss, president of Koss Construction Co., Des Moines, Iowa, has been elected president for 1955. Frank J. Rooney, president of Frank J. Rooney, Inc., Miami, Fla. is the new vice-president.



Just Published!

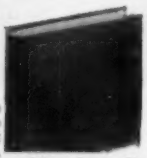
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Self-study manual for everyone in the building industry. Develops practical know-how with a new idea of "seeing" architectural features. Forms an orderly habit of approaching house plans and reading details step by step. Includes complete house plans, and covers all views, survey and plot plans, written specifications, etc. **By J. Ralph Dalzell. 146 pp., 61 plates on large format, $5.50**

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Gives you quick, accurate methods for estimating the exact unit costs of building a house in any price range, location, or size. Covers everything from digging the foundation to hanging the last roll of wallpaper. Provides cost data on earthwork, masonry, carpentry, plastering, plumbing, etc. **By G. Underwood, Builder. 302 pp., 63 illus., $6.00**

LEGAL GUIDE for CONTRACTORS, ARCHITECTS and ENGINEERS

A handy legal guide to forewarn you of common pitfalls in your field . . . help for preventing costly lawsuits. Describes 83 situations reviewing typical problems arising out of construction contracts. Easily understood by the layman, it gives facts and contract provisions in each situation, and cites cases to sustain the principles of law set forth. **By I. Vernon Werbin, Member of N. Y. Bar and Lic. Prof. Eng. 374 pp. $6.00**

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Mack Model LRSW working under a 4-yard shovel on the tough Ardsley-Tarrytown section of New York Thruway.

big shovels call for big trucks

Today's big-yardage jobs demand maximum loads per haul and faster time cycles from shovel to dumping point and return. Increasing use of big 4- and 5-yard shovels points to the Mack Model LRSW six-wheel dump truck as the answer to these stepped-up requirements.

Here's a truck that's built to keep big shovels on the go . . . to give contractors increased production per driver and per truck dollar invested.

Rated at 30 tons payload capacity, it will move 25 heaped yards with unfaltering ease over the toughest terrain. No miring in with Model LRSW—it has the advantage of Mack's Balanced Bogie with exclusive Power Divider, enabling it to pull through where other trucks bog down. In actual service Model LRSW has demonstrated its ability to maintain the time schedule of smaller-capacity dumpers.

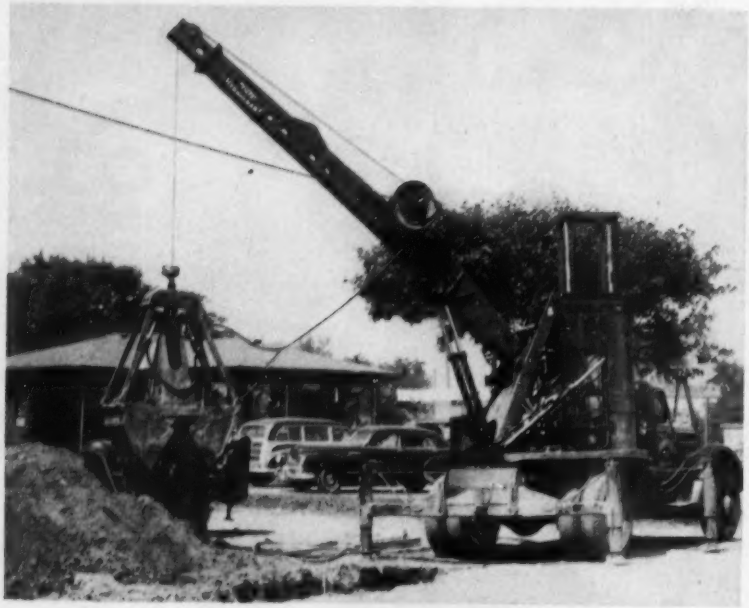
Why not investigate the big-unit economy of Mack Model LRSW. It will pay you to see these big jobs at work.

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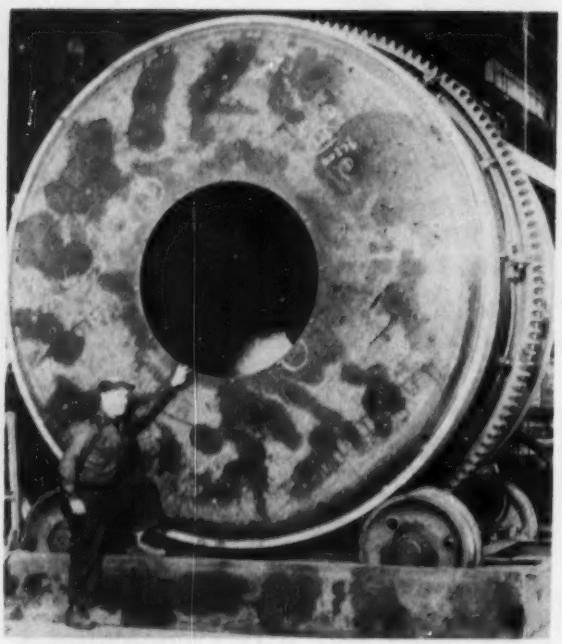
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CONSTRUCTION EQUIPMENT NEWS



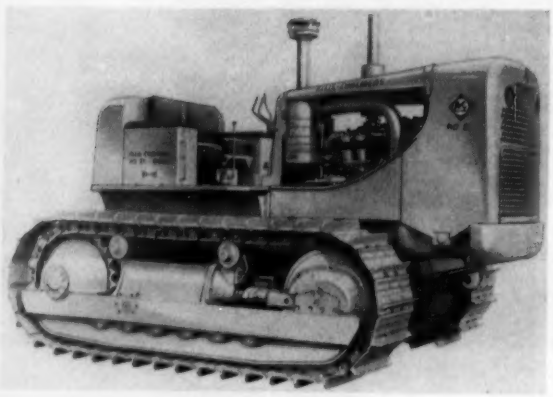
Two-Ram Clamshell Bucket

A ⅜-cu yd clamshell bucket, which uses two hydraulically operated rams instead of one to handle bowl action, has been developed for use with the Bucyrus-Erie truck-mounted, all hydraulic H-3 Hydro-crane. Lower ends of the rams are attached directly to the upper edge of the bowl sections. Use of the twin rams, coupled with improved leverage, it is claimed, provides 42% more force to the lips at the point of closing than earlier buckets.—**Bucyrus-Erie Co., South Milwaukee, Wis.**



World's Largest Concrete Mixer?

Claimed to be the world's largest concrete mixer is this giant unit being constructed for Miron Freres Ltd., Montreal, Canada. It will have a rated capacity of 9 cu yd, plus 10% overload. Identified as the 252-S Worthington Mixer it is expected to be in operation early in May. Thirty-six 9-cu yd truck-mounted agitator units will transport the concrete mixed in the central mixer.—**Worthington Corp., Harrison, N. J.**





New AC Tractor and Scraper

"The biggest and most powerful tractor in production," is the description of the Allis-Chalmers HD-21 just announced. It weighs 44,000 lb, develops 204 hp, and offers torque converter drive as standard equipment. The TS-360 Motor Scraper, also just announced, weighs 49,000 lb and has 15-cu yd struck capacity. It's powered with a new 280-hp AC diesel engine.—**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**

On-the-Job Previews of Machinery, Tools and Equipment

Oliver Announces New Crawler

After 14-months testing, the new Oliver crawler tractor, Model OC-12, is now in production. Available with either diesel 45.1-hp or gasoline 44.3-hp engine the tractor weighs 11,000 lb. Both engines have new, large radiators with pressure systems and by-pass thermostats. The OC-12 comes in two track gage widths—44 and 60 in.—and two track lengths. Allied equipment includes a 1-cu yd hydraulic loader and bulldozer. It has four speeds forward and two in reverse.—**The Oliver Corp., 400 W. Madison St., Chicago 6, Ill.**





New Heavy-Duty Concrete Saw

Designed for heavy-duty performance, this 25-hp concrete saw will move under full load at speeds up to 12 fpm. Two abrasive coated wheels act as a positive friction drive to both rear wheels of the saw. The self-propelling unit is engaged or disengaged by foot pedals. Cutting speed is regulated by a control lever transmission.—**Eveready BrikSaw Co., 1509 S. Michigan Blvd., Chicago 5, Ill.**



New 1½-Ton Roller

The Ken Roll, a 1½-ton roller has been designed for light jobs such as driveways, parking lots and sidewalks. It has a 36-in. main or drive roll 30½ in. in dia, and it will compact within ½ or ¾ in. of wall or post. It is powered by a 6-hp air-cooled gasoline engine. The rig is 40⅞ in. wide, 83½ in. long and 42½ in. and 55 in. high.—**Pfahler Manufacturing Co., Rt. 3, Galion, Ohio.**



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The Wonder Grease for Concrete Forms

REGARDLESS of whether you use steel or wooden forms for concrete work — you can apply Globe Form Grease by spray, brush, or swab. This time-tested paste emulsion will reduce peeling and pitting to a minimum when forms are removed, and practically eliminate patching.

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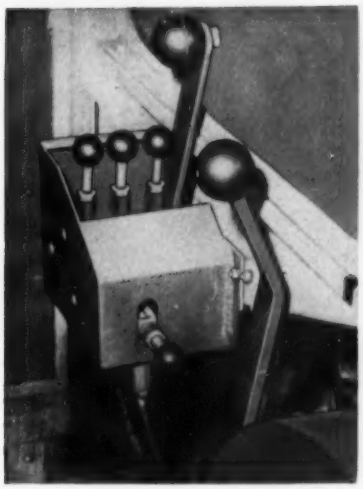
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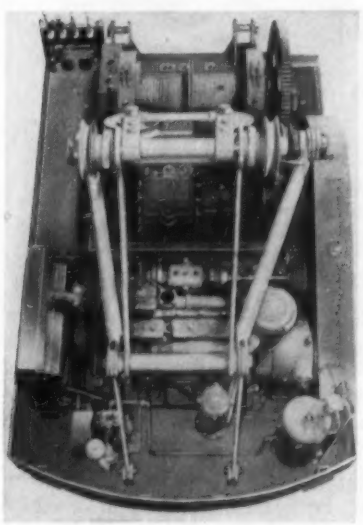
EQUIPMENT NEWS . . .

Continued from page 187

Shovels, Cranes



REDUCED OPERATOR EFFORT—Thew Shovel machines used in the ½- and ¾-yd classes are now equipped with E-Z action control which, it is claimed, reduces the effort on the operating levers by 70%. The operating levers actuate the clutches through a simpler linkage in which the number of parts has been reduced and easier, faster response achieved through the use of 19 anti-friction bearings.—**The Thew Shovel Co., Lorain, Ohio.**



NEW 2-YD MARION—The new Marion 83-M has just been announced. As a 2-yd shovel the 83-M was designed for use in construction, quarrying and mining. The machine can be converted in the field to a dragline, clamshell, pull shovel or crane. The 83-M features both heavy-duty



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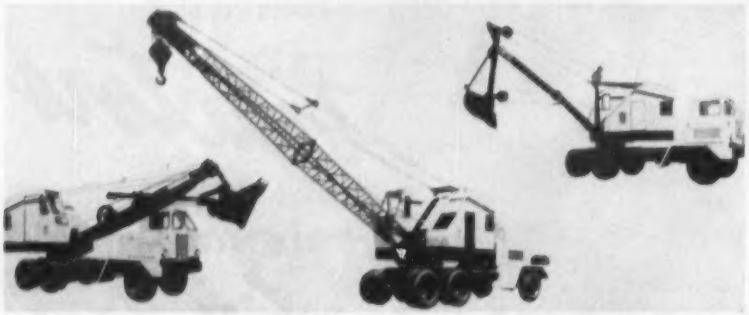
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construction and special design features for crane service. A third drum is available on the crane for handling piles snaking-in or snubbing loads, or it can be used as a high-speed boom hoist. It has a high retractable and self-raising gantry which is raised or lowered under power in a matter of minutes. An independent boom hoist, optionally available, provides power up and down in the raising and lowering of loads, and it uses machinery power instead of a brake to control lowering of the boom. For extra stability in crane service, the crawler width can be spread to 13 ft 5 in., and extra-long 19-ft crawlers are available. Other features include two propel brakes for ease of steering, low center of gravity, specially designed butt joints for ease in changing boom lengths in the field, machine-grooved drums and large diameter sheaves for longer life of wire rope and full vertical vision for the operator.—**Marion Power Shovel Company, Marion, Ohio.**



DIXIE CRANE—A high-speed excavator in the ⅜-yd., 5-6-ton class has been introduced with crane, shovel or trench hoe rigs available on either rubber-tired crane carrier or on 20-in. crawlers. A complete line of attachments for dragline, clamshell, magnet, pile driver, grapple or concrete bucket work is available. Crane-rigged on rubber tires, the Dixie has a lifting capacity of 6 tons with a standard 25-ft boom at a 10-ft radius. 5- and 10-ft boom inserts and a jib can be furnished to supplement the two 12½-ft standard sections. As a shovel, the unit can excavate the maximum height of 18½ ft and dump at 13 ft. Maximum dumping radius is 19 ft, and it can dig at 2½ ft below ground level. The ⅜-yd bucket is equipped with power-operated dipper trip. When set for trench-hoe operation, the unit can cut 13½ ft below ground with an above ground clearance of more than 15 ft at end of dump. The trench hoe can reach out 23½ ft. at ground level. Depending on the unit the weights range from 19,800 to 25,435 lb.—**Dixie Crane & Shovel Co., Harrisburg, Pa.**



SPEED-O-MATIC CONTROLS FOR LS-88—Speed-o-Matic controls are available for the first time on the heavy-duty ¾-yd LS-88 shovel crane with power hydraulic controls that make all load handling and machine movements smoother, safer, faster and more precise, according to the manufacturer. The movement of short-throw levers meters pressure for full control of power for all machine functions, and statistics are available to show that this can result in increasing production up to 25%.—**Link-Belt Speeder Corp., Cedar Rapids, Iowa.**

Welding



ARC WELDER—The Lincoln Electric Co. of Cleveland has introduced a new universal combination arc welder which provides either ac or dc welding current. The new machine is called the Idealarc and is available in several combinations. It can be obtained as an ac welder without the dc current. To this unit a dc package can be attached in about an hour, if needed. It is also available as a combination ac and dc machine with selection of either current made through a simple twist of switch handle. Current models available are 300, 400 and 500 amp ac combined with dc capacities in 200, 300, 375 and 450 amp.—**The Lincoln Electric Co., Cleveland, Ohio.**



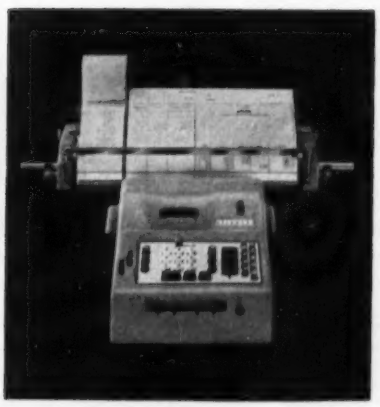
ACETYLENE GENERATOR — An explosion-proof, portable acetylene gas generator is now available. There can be no hazard of explosion as a result of accidental tipping or dropping, as a special design prevents water from flooding the carbide hopper even upside down, while charged and in operation. The Port-A-Matic is a portable one-man unit. It comes in three sizes of approximately 5 cu ft, 12½ cu ft and 25 cu ft and has gas capacities weighing 30, 50 and 80 lb loaded.—**Port-A-Matic, Inc. of Hillsboro, Ore.**

to builders and building suppliers:



The Olivetti Printing Calculator cuts overhead costs by making all figure-work quick, easy, and automatic. The printed tape record can be quickly verified for accurate entry; attached to invoices, payrolls, lumber tallies and other papers; filed; shown to suppliers and customers. Multiplication and division are completely and uniquely automatic. Costs less than, but does the work of, 2 separate machines: a calculator and a fast 10-key adding machine with direct subtraction.

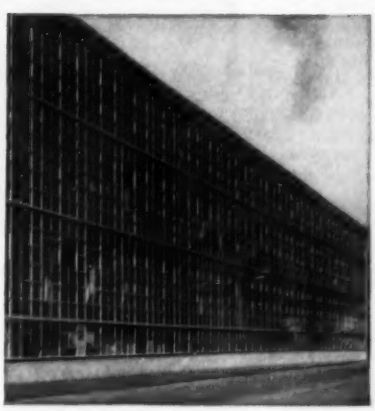
these calculators can help cut your overhead



The Olivetti Automatic Carriage Printing Calculator provides mechanized bookkeeping. It automatically calculates, and prints desired figures on record-forms, automatically moving to the proper columns. It can perform 21 separate operations automatically, in desired sequence; the sequence can be quickly changed. Its platen splits to take a 3-inch tape; it then operates exactly like the Olivetti Printing Calculator (above).

olivetti

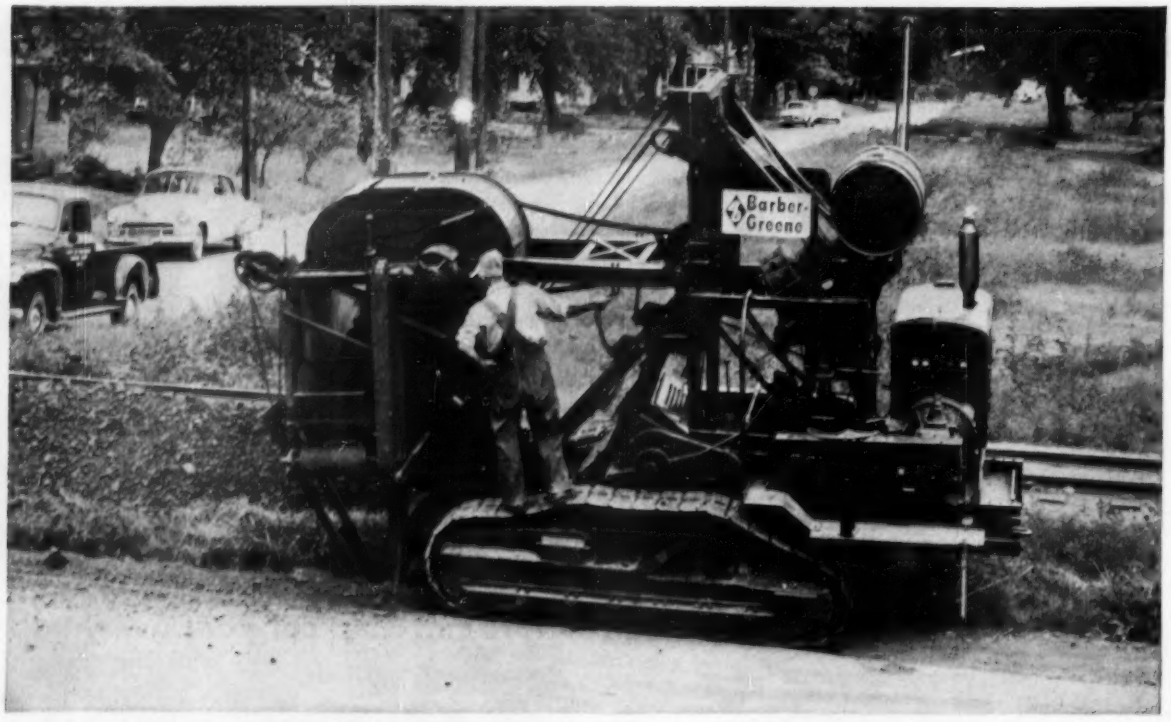
The Olivetti Printing Calculator, proved thoroughly dependable in 7 years of commercial use, has a lower cost maintenance contract than any comparable machine. More than 20,000 are on the job in the United States today. They are sold and serviced by 450 Olivetti dealers in every state of the Union, and by Olivetti branch offices; immediate delivery. No spare part is ever more than 24 hours away from any Olivetti dealer. Some of America's great corporations have specified "Olivetti". Why don't *you* investigate work-saving Olivetti machines? Send the coupon.



OLIVETTI CORPORATION OF AMERICA
Dept. DP
580 Fifth Avenue
New York 36, New York

Gentlemen: I'd like to know more about the Olivetti Printing Calculator ( ), the Olivetti Automatic Carriage Printing Calculator ( ), and how they can help cut my overhead. Without obligating me in any way, please let me have this information as soon as possible.

Name.....
Title.....
Company.....
Street.....
City..... State .....



Important Power Developments For Ditchers

Minneapolis-Moline powered Barber-Greene ditchers and Warner-Swasey Gradalls are examples of the trend to heavy-duty power in excavators. Continuous-operation and high-capacity requirements of these models are met by MM engines with a reserve of high-torque power.

Large displacement and high-turbulence combustion of MM engines deliver high torque at moderate rpm to give owners extra years of service with lower fuel and maintenance costs.

Since 1932 MM engines have had pocketed combustion chamber design similar to designs recently developed as new and outstanding by the automotive industry. Special MM chambers provide high-turbulence efficiency with minimum heat-power loss and prolonged power stroke.

MM valves are also typical of extra quality and lasting performance. They have extra high lift—large diameter stem—and exhaust valve seats are special stellite inserts.

Further economy of cost and operation is made possible by the wide range of MM power sizes and fuel types that include the new MM energy-cell diesel units.



Sizes from 27—292 hp.

165-4A	4 cyl.	3⅛"x4"	4D25-6A diesel	6 cyl.	4¼"x5"
206A-4A	4 cyl.	3⅛"x5"	605-6A	6 cyl.	4⅜"x6"
283-4A	4 cyl.	4¼"x5"	D605-6A diesel	6 cyl.	4⅜"x6"
D283-4A diesel	4 cyl.	4¼"x5"	800-6A	6 cyl.	5 5/16"x6"
403-4A	4 cyl.	4⅜"x6"	1210-12A	12 cyl.	4⅜"x6"
425-6A	6 cyl.	4¼"x5"	1600-12A	12 cyl.	5 5/16"x6"

INDUSTRIAL MM MODERN MACHINERY DIVISION

MINNEAPOLIS-MOLINE
INDUSTRIAL DIVISION
MINNEAPOLIS 1, MINNESOTA



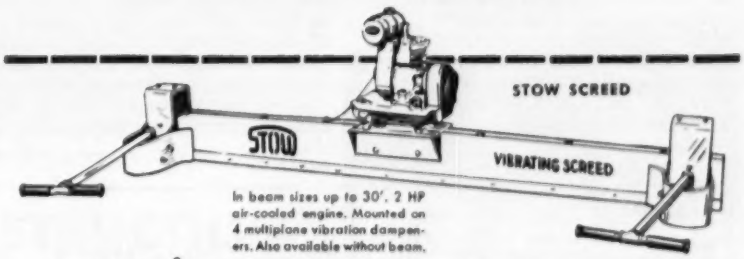
STUD WELDING GUN — Identified as the NS-9 a new streamlined stud welding gun will be available with cable and control in two sizes. One will be for welding studs with diameters up to ½ in., and the other for any diameter from 10-gage up to 1 in. and greater. The new gun is claimed to have a number of advantages. The new design accommodates a greater range of stud length without changing adaptors or other accessories; arc lengths can be adjusted without disassembly; new coil design offers greater lifting power and improved efficiency.— **Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio.**

Drills

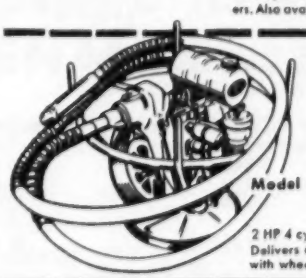


PORTABLE ROTARY DRILL—This Model DL-375S portable rotary hammer weighs only 9½ lb. The 15-in. drill requires only light pressure to operate which makes it ideal for

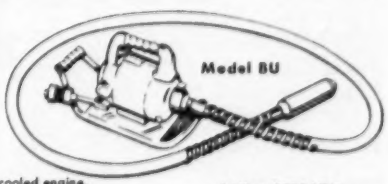
Concrete facts about Concrete Vibrators and Screeds



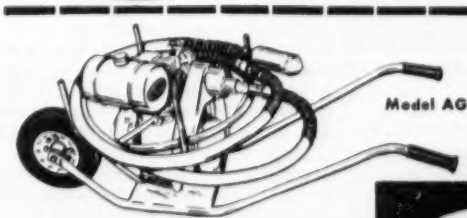
In beam sizes up to 30'. 2 HP air-cooled engine. Mounted on 4 multiplane vibration dampeners. Also available without beam.



2 HP 4 cycle air-cooled engine. Delivers 6000 to 9300 Available with wheelbarrow mount.



2 HP at 9000 VPM 115 V. AC or DC



4½ HP 4 cycle air-cooled engine. Mounted on wheelbarrow for easy maneuverability. Delivers 6000-9300. Available without wheelbarrow.

Here is the name you want!

STOW

The high operating speeds of the new STOW line of Concrete Vibrators make possible the use of heavy duty, light weight flexible shafting and lighter, more efficient vibrator heads—which speed operations, cut costs. And, STOW design provides convenient, practical speed control so *attachments may be used directly on the vibrator shafts.*

STOW SCREEDS—permit placing more than 300 cu. yds. in less than 8 hours; strike off and impact in one operation; leave surfaces true to grade; work up to and around manhole covers and obstructions.

See your STOW distributor about STOW vibrators and screeds today. Send for free Catalog 552.



STOW MANUFACTURING COMPANY
31 Shear Street Binghamton, New York

(Advertisement)

Darex Diary



by Henry L. Kennedy

Member, American Concrete Institute
Manager, Construction Products
Dewey & Almy Chemical Company

- Why air entrainment increases unit weight of mass concrete gravity dams
- A new product to keep cellars dry

A QUESTION that I have often been asked is "why use air entrainment in mass concrete gravity dams where weight is a basic requirement?"

Before air entrainment, a four-sack mix for mass concrete was necessary in order to get proper placement, proper consolidation and to minimize segregation and honeycombing. Today, with air entrainment, it is possible to use greater proportions of aggregate per unit of volume, maintaining the same or better placeability and without sacrificing unit weight. Actually, as shown in the following table, the unit weight of air entrained concrete in mass structures is generally greater than the usual mass concrete poured without air.

CONCRETE MIXES

AIR ENTRAINED			PLAIN		
C/F		2.5 sks/cu. yd.	C/F		4.0 sks/cu. yd.
W/C		7.5 gals/sk	W/C		6.0 gals/sk
Air		3.0% (actual 2.5%)	Air		1.5% (accidental)
Sp. Gr. F.A.		2.70	Sp. Gr. F.A.		2.70
Sp. Gr. C.A.		2.78	Sp. Gr. C.A.		2.78
% F.A./T.A.		19%	% F.A./T.A.		30%
Batch Wts.		**Abs. Vol.**	**Batch Wts.**		**Abs. Vol.**
Cement	235 lbs.	1.19	Cement	376 lbs.	1.91
Water	156 lbs.	2.50	Water	200 lbs.	3.21
F.A.	726 lbs.	4.30	F.A.	1090 lbs.	6.45
C.A.	3190 lbs.	18.30	C.A.	2605 lbs.	15.05
		0.68			0.41
	4307 lbs.	26.97		4271 lbs.	27.03
Unit Wt.		159.5 lbs/ft.³	Unit Wt.		158.0 lbs/ft.³

Note the decrease in cement content and the greater ratio of coarse to fine aggregate when air entrainment is used. Also note the substantial reduction in water.

However, in average mixes, about 4.5 to 5.5 sacks per yard, air entrainment brings about reduced unit weight; and from a dead-load and transportation cost point of view, this may be considered advantageous. In other words, with little or no effect on the strength factor, the entrainment of air in average mixes reduces unit weight; thus reduces dead-load which has to be carried in the structure and reduces weight which has to be conveyed to the job in a ready mix truck.

* * *

A SHORT TIME AGO I saw one of the most convincing tests of a new product that I have ever seen.

The Dewey and Almy laboratories have developed a DARAWELD portland cement paste that showed considerable promise as a water repellent for the interior of below grade surfaces. I challenged them to test it on the walls of my auxiliary cellar. These "walls" were originally constructed to serve only as a foundation. They are not of concrete, but rather rubble and lime mortar and cement mortar and whatever else was suitable for a foundation. They became "walls" some 18 years ago when we found it necessary to dig an auxiliary cellar for extra storage space . . . and they have leaked all through those 18 years.

Eight days after the DARAWELD had been applied, we had a 1.67 in. rain in 14 hours. Ordinarily, that would have been enough to put about 2 inches of water over the entire auxiliary basement floor. I viewed the basement after the rains had stopped, and to my amazement the wall was completely dry, and I mean bone dry. I estimate that I had at least a 2-foot head tending to force that water through the inferior lime mortar.

We shall keep you posted on our progress with DARAWELD . . . and will be glad to send you more complete information about it.

DEWEY and ALMY CHEMICAL COMPANY
DIVISION OF W. R. GRACE & CO., **Cambridge 40, Mass.**

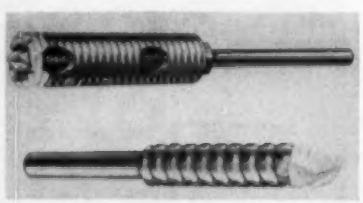
Offices or Subsidiaries in principal U. S. cities
and in Buenos Aires, Copenhagen, London, Melbourne, Milan, Montevideo, Montreal, Naples, Paris, São Paulo, Tokyo.

DRILLS . . . Continued

overhead or ceiling work in concrete for pipe suspensory and fixtures. The Demo tool is powered by a heavy-duty Thor electric motor rated at 115 v, ac-dc, 5 amp, 60 cycles or less. It will drill self-cleaning holes from 3/16 to 1½ in. dia through materials including reinforced concrete, without changing bits or drills.—**Demo Tool Corp., 8735 Melrose Ave., Los Angeles, Calif.**



MECHANIZED MOLE—A new type mole diamond drilling bit and a new lightweight portable drilling machine cuts through hard aggregate and steel reinforcing bars without loss of drilling speed. It will cut a 1- to 6-in. diameter hole in a foot of concrete in less than 2 min. It also will drill ½- to 6-in. diameter holes, 18 in. deep, in one single operation. Power for the moles varies from 1-hp motors up to 2-hp.—**MOLCO Drilling Machines, Inc, 1100 — 20th St., N.W., Washington, D. C.**



MASONRY DRILLS — These New Blue Tip masonry drills are finished in a hard chrome which the manufacturer claims eliminates "walking" in core-type drills. Both core-type and twin-cutter-type drills are available. The core-type drill is available in sizes up to 2 in. as standard stock and up to 6 in. on special order. The twin-cutter drills are available in sizes from ¼ to 1 in.—**Royal Arc Industries, Inc., Chillicothe, Ill.**



Gradall removes old fill and sections of pavement on Route 1 near New Brunswick, N. J.

HIGHWAY CONSTRUCTION AND MAINTENANCE...

a "natural" for the cost-cutting Gradall!

Hundreds of Gradall owners are "cashing-in" today, cutting costs on the many *different* jobs they handle regularly with Gradalls!

They can take on jobs with a Gradall that no other machine can touch—jobs that require Gradall's *arm-action* accuracy, work where they need Gradall's powerful hydraulic *down pressure*, or jobs in tight quarters where no other machine can work. And a Gradall, carrying its own quickly interchangeable attachments, is always ready for the *next* job!

Contractors keep their Gradalls busy the year round on construction and maintenance contracts, working for state highway departments, turnpike commissions and counties.

And *proof* that this multi-purpose machine *is* so ideally suited for highway work is evidenced by the fact that today **19 STATE HIGHWAY DEPARTMENTS AND TURNPIKE COMMISSIONS** and **37 COUNTIES** throughout the country own Gradalls themselves! One county alone, Harris County, Texas, keeps a fleet of 12 Gradalls busy!

Whether you're a contractor, or a state, county or turnpike official, you should see a Gradall in action before purchasing any new equipment. Arrange a field demonstration with your local Gradall Dealer. See how this multi-purpose machine can cut costs, eliminate hand labor, and speed work for you!



PENNSYLVANIA TURNPIKE — *Gradall rips out large sections of concrete in enlarging toll gate. Gradalls are used extensively for many maintenance and construction jobs, averaging a full 40 hours' operation per week.*



NEW YORK THRUWAY *maintenance keeps Gradalls busy the year round, maintaining drainage system as shown, and many other jobs. Gradall contractors get a big share of other contracted work.*



WEST VIRGINIA TURNPIKE *construction proved Gradall's importance to highway contractors. Gradalls averaged 60 to 140 on-the-job hours every week for a number of leading contractors, often handling work no other machine could touch.*



TORONTO, ONT. TOWNSHIP, *after two-year rental, bought a Gradall to solve problem of maintenance of 700 miles of ditches in this expanding community. It cleans 400 to 1200 feet every 10 hours, plus handling many other jobs.*



CRAWLER-MOUNTED GRADALL

SELF-PROPELLED GRADALL

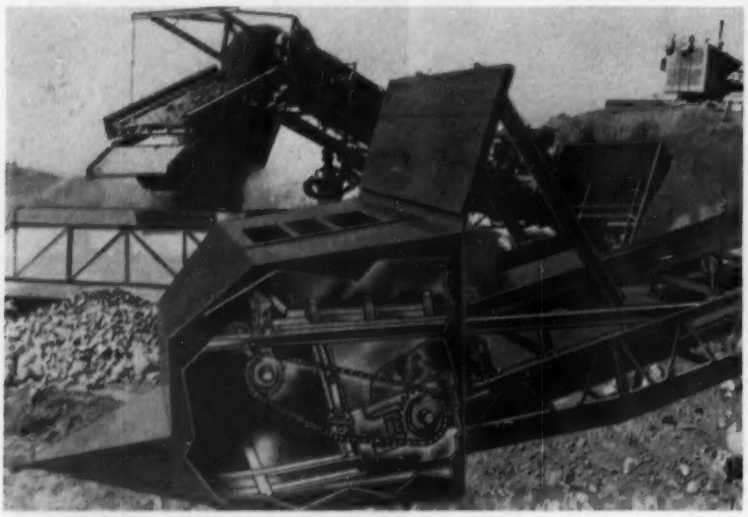
RAILROAD GRADALL

Gradall
DIVISION OF WARNER & SWASEY Cleveland

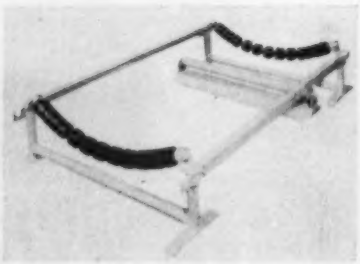
Distributors in over 75 principal cities in the United States and Canada

YOU CAN PRODUCE IT BETTER, FASTER, FOR LESS WITH WARNER & SWASEY MACHINE TOOLS, TEXTILE MACHINERY, CONSTRUCTION MACHINERY

Conveyors

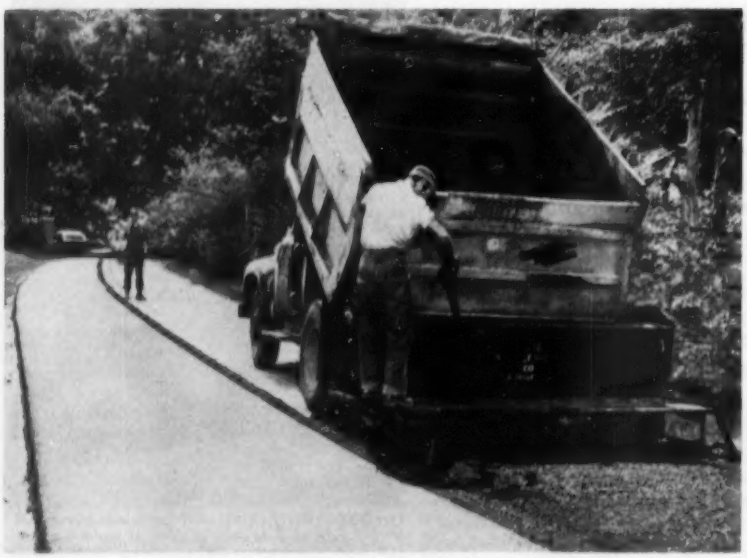


NEW FEEDER-TRAP FEATURE—A new feature on portable conveyor-screen plants is the reciprocating plate feeder built into the Kolman loading trap. This design provides a complete loading and screening plant which is entirely portable by making the plate feeder an integral part of the conveyor and trap. The traps are adaptable to most loading situations. **—Kolman Mfg. Co., Sioux Falls, S. Dak.**



SUSPENSION IDLER—The Limberoller is a flexible, two-bearing cable-suspension idler for belt-conveyor support. It consists of resilient, pressure-molded neoprene disks molded to a neoprene sheathed, flexible steel cable. The cable is freely suspended from two bearings which are slot-mounted in special bracketed stands. Stands are assembled into conveyor sections, without bolts or cover sheets by bed-frame-type channel rails. The disks are all of the same size, and all revolve at the same speed. The Limberoller permits conveyor heights from 13 to 15¾ in. and is available for belt widths of 24, 30 and 36 in.—**Joy Mfg. Co., Pittsburgh, Pa.**

Asphalt

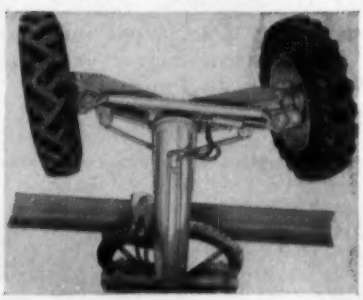


ASPHALT AND AGGREGATE SPREADER—This hopper-type asphalt and aggregate spreader was designed to meet the needs of contractors and highway personnel for a simple, practical, easy-to-operate, low-cost machine that will spread a smooth carpet of dry materials, as well as asphalt. It hooks to any standard dump or semi-dump truck without the use of truck-mounted attachments. The simple connection is positive and can be made or dis-

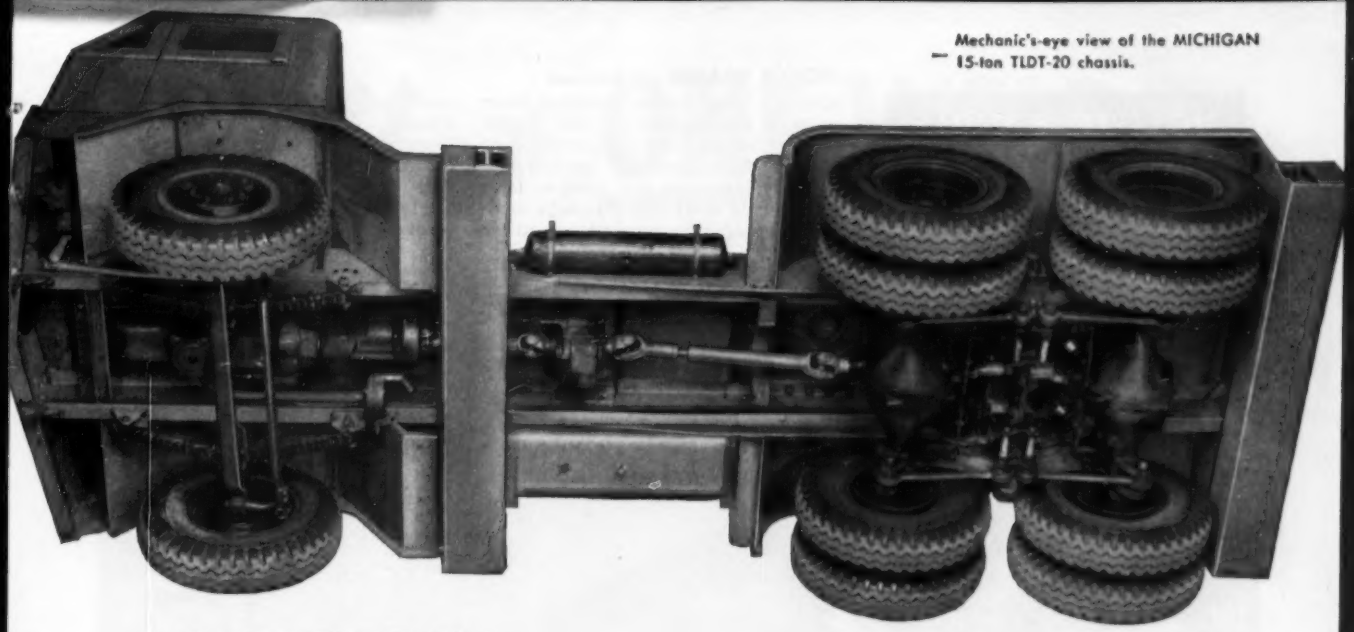


connected in a few minutes. The hopper is mounted on large dia wide steel rollers enabling it to travel over subgrade or base without digging in or gouging. The strike-off unit floats free of the hopper riding on 6-ft long steel runners. It will spread hot or cold plant-mix asphalt, tank-run gravel, coarse or fine slag and limestone, cinders, and practically any kind of base materials. Adjustment selects thickness of spread from a feather edge up to 8 in. The standard model will lay an 8-ft spread, or it can be blocked off for widths under 8 ft. Width of spread can be extended up to 10 ft by simple adjustment. **—Good Roads Machinery Corp., Minerva, Ohio.**

Motor Graders



NEW FRONT WHEEL DESIGN—Design changes on the front-wheel assembly for the AC-Model D motor grader provide greater service and performance and add further

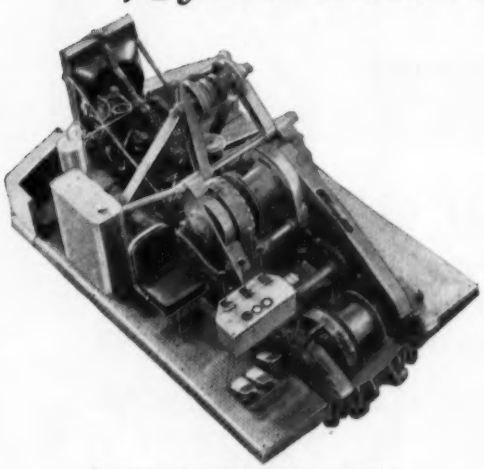


Mechanic's-eye view of the MICHIGAN 15-ton TLDT-20 chassis.

NEWS!... More Quality Features

are Standard Equipment on MICHIGAN

½ yard models than on any comparable machine



The basic ½-yard turntable mechanism —maximum service accessibility.

In your point-for-point comparison (a smart buying tactic!) take special note of these great value features—"extras" on many other makes, standard on MICHIGAN ½ yard Truck Excavator-Cranes.

16-Ton Axles — tremendous strength! No wonder your MICHIGAN stands years of punishment.

404 Cubic-inch Truck Engine—huge power! Compare it to other ½-yard machines.

Cast Steel Turntable—machinery deck with boom hinge-pin bracket and hook roller brackets in a single rugged steel casting.

6 Hook Rollers—on most others you get only 3 or 4. MICHIGAN rollers are ball-bearing mounted for friction-free swings and tapered for easy adjustment.

Air Powered Clutches—famous for smooth, positive action; faster swing; minimum fatigue; and easy, quick service.

Ball Bearings—on all shafts and drums.

Power Up and Power Down — on the front drum for precision crane work.

Add these up and get this sure-thing, profitable answer: You Move More With A MICHIGAN. For more information, contact your local MICHIGAN distributor. Or send us the coupon.

MICHIGAN Tractor Shovels are available under the Clark Leasing Plan—we'll be glad to send you details.



Front-view of four of the MICHIGAN's six adjustable hook rollers.

CLARK EQUIPMENT

CLARK EQUIPMENT COMPANY 26
Construction Machinery Division
380 Second St., Benton Harbor, Michigan

☐ Please send MICHIGAN ½-yard Bulletin ☐ Send Lease Plan data sheet

Name_____ Title_____

Firm_____

Address_____

City_____ County_____ State_____

HOW TO HANDLE
WET JOBS

ATOMIC SUBMARINE LABORATORY

West Milton, N. Y.

Excavation: Elmhurst Contracting Co.



QUAKY SOIL—fine alluvial silt overlying bedrock — was a hazard confronting General Electric and A.E.C. Vibration of excavating machinery made soil fluid, caused collapse of test hole.

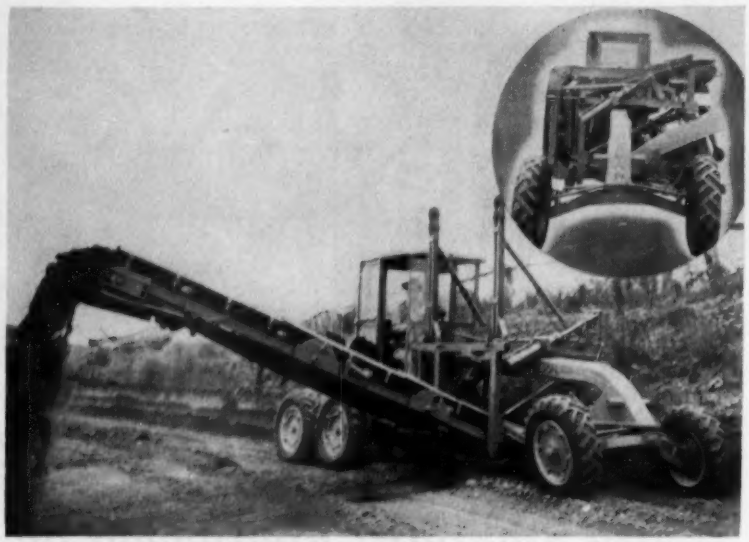


A VACUUM WELLPOINT system, by Griffin, solved the rare type of problem involved. Removal of small amounts of water (only 20 gpm)—this plus high vacuum was enough to make soil stable—even to stand at slopes as steep as 1½ on 1 (See photo).

THE SKILLS of the wellpoint engineers were taxed in many ways. A vacuum system is itself complex. The sand filters required special techniques. Though part of subgrade lay 25 ft below ground water, a multi-stage system was avoided —by working with header line *below* natural water table.

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

strength. The design revisions have reduced the number of wear points on the leaning front assembly and on the grader's steering mechanism. Shim adjustments are used to take up knuckle wear and bushings have been replaced by tapered and roller bearings. Improved control over leaning operations has resulted from reducing the travel speed of the leaning front wheels and adding further strength to the tie rods.—**Allis-Chalmers Mfg. Co., Tractor Div., Milwaukee 1, Wis.**

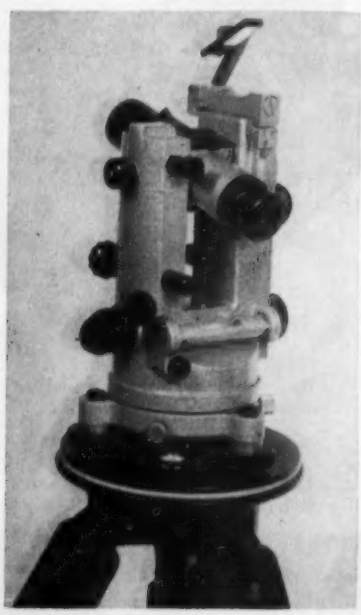


GRADER ATTACHMENT — A new B&L elevating grader attachment for the Galion Model 503 motor grader features design features of the proved larger elevating grader attachments. A patented folding mechanism makes this unit especially adaptable for transporting without highway permits.—**Barnard & Leas Mfg. Co., Inc., Cedar Rapids, Iowa.**

Surveyors Instruments



TRANSIT—Contractors and engineers who want a moderate-priced surveying instrument can get it in this one, called the Polara. It is a standard 5½-in. transit with a 10½-in. 22-power erecting internal focusing telescope with coated optics. It is water-resistant, has a dustproof compass with 3-in. needle graduated to ½ deg, and is adjustable for declination.—**C. L. Berger & Sons, Inc., 37 William St., Boston 19, Mass.**



NEW OPTICAL TRANSIT—Now available is a leaflet describing the optical universal theodolite Askania TKT transit with terrestric telescope

(Continued on page 202)

NOW! with ONE WELDER you have both AC and DC for every welding job



LINCOLN IDEALARC

NOW DC welder for operation on single phase power.

NOW Rectifier welder with *both* current and voltage controls.

NOW Rectifier welder with arc booster starting on DC and AC.

Why tie down your operation with one choice of welding current? Lincoln Idealarc now gives you complete freedom to select the ideal arc . . . soft arc or forceful arc . . . AC and DC . . . for the same investment in equipment.

SEND FOR FACTS

Write for Bulletin 1343

THE LINCOLN ELECTRIC COMPANY

Dept. 2701

CLEVELAND 17, OHIO

THE WORLD'S LARGEST MANUFACTURER OF ARC WELDING EQUIPMENT

(Advertisement)

EIMCO TRACTOR — 3rd of a Series



Eimco Tractor with Eimco loading attachment working in hard rock in Africa. This is the type of work on which Eimco tractors were tested for more than two years — no more abusive test can be found. That is why:

Eimco's Confidence in New Tractor is Backed by One Year Warranty

Eimco's tractor with its 124 Horsepower Cummins Diesel Engine has numerous features that make it an entirely new tractor. Each of these features have been put into the machine in order to do a number of important things for the user. First, to make it foolproof; second, to make it strong; third, to design it so that maintenance would take a fraction of the time required for the same operation on a conventional tractor; fourth, to make the tractor so easy to operate and so maneuverable on the job that any operator could do from 30 to 40% more work per shift and be less fatigued when the shift was complete.



The Eimco 105 Tractor

Operators of crawler tractors agree that the toughest kind of service to which a crawler tractor can be subjected, the service that will reduce the life span of a tractor to a minimum, is produced by mounting an overhead loading attachment on the frame of the tractor. Conventional tractors are not designed to withstand the unusual stresses, the vertical loads and the rolling, twisting forces produced by such an attachment which, in many cases, may subject the tractor to loads in excess of its own original weight. On the other hand, **Eimco's tractors are built specifically to take these unusual loads and perform with maximum efficiency.**

Hundreds of thousands of hours have now been worked by these Eimco 105 tractors in doing the type of loading job "not recommended" by other tractor manufacturers — **Eimcos are always the SAFE bet.** In loading rock, breaking out semi-consolidated molten slag, digging in unbroken red clay, and many other difficult jobs, the Eimco has proven its ability to meet requirements.

This is the tractor Eimco is confident will build its own reputation in the crawler tractor field, backed up by Eimco's One Year Warranty.

Customers who have used the Eimco 105 under these conditions have substantiated their satisfaction by repeat orders.

There are many reasons why the Eimco tractor gets quick acceptance.

THE EIMCO CORPORATION
Salt Lake City, Utah—U.S.A.

(Advertisement)

Prospective purchasers have taken advantage of Eimco offers.

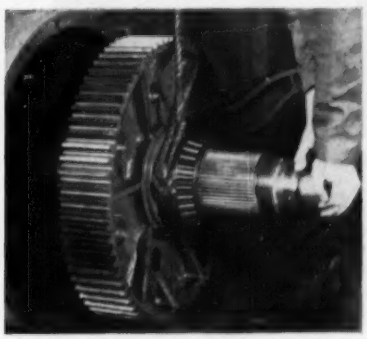
1. **Test the machine on their own jobs.** Contractors and industries who have arranged for trial performances, in every case, have ended up as buyers.

2. **Visit the Eimco manufacturing plant.** Representatives of contractors, industries, municipalities and numerous others have gone away convinced that Eimco really had something new in tractors, that they had the most modern manufacturing facilities and know-how to produce this new machine that marks an epoch in tractor design.

Here are some of the impressive features that convinced the trial user and plant visitor.

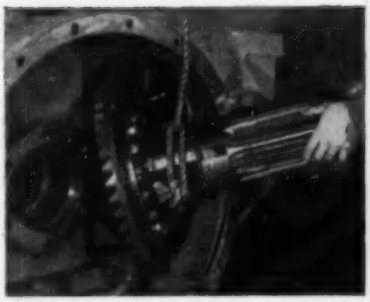
FINAL DRIVE PARTS

All parts of the final drive can be removed through the cover plate opening.



Notice the short length of the main drive shaft, notice the large diameter. This is a solid alloy steel shaft of the toughest type for impact resistance.

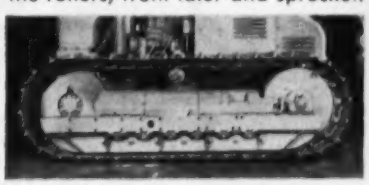
Compare these Eimco shafts with average size shafts used in conventional tractors where shafts are long and assemblies are complicated by using the usual method of installing clutches, brakes and all the necessary operating linkages in the final drive housing.



The pinion shaft is heavy and short. The bevel gear is bolted to a hub which is pressed on the pinion and forms a simple heavy assembly.

The master clutch is completely eliminated in the Eimco design and therefore one of the great sources of tractor troubles has been banished forever.

One of the greatest contributions to the industry is Eimco's approach to the design and construction of the 105 track assembly, especially the rollers, front idler and sprocket.



The track assembly on the Eimco Tractor. Alloy steel parts are used throughout.

These parts have already been given considerable general explanatory treatment. Here is the reason the Eimco 105 tractor can be offered with such confidence. In tests, the Eimco has been operated side by side with well known popular brand tractors. In many of these tests, the high maintenance on the competitive equipment was first apparent in the track assemblies — **the Eimco parts keep operating month after month with a minimum of attention.**

Each of these pieces is made from one piece alloy-steel castings. Each of these pieces is carefully heat-treated in the Eimco Spintrete furnace. This produces a hardness of sufficient depth and strength on all wearing surfaces to insure long life and a good tough core to resist shock and fatigues.



The Eimco Spintrete furnace where wearing surfaces are given special treatment for extra long life.

These are a few of the important features that provide many times the operating life of conventional equipment in the crawler tractor field. These are the reasons Eimco confidently offers to back their tractor in a way that no other tractor manufacturer does.

Do you want better labor relations? Do you want to make more money on your contract job? Is it important to you to carry a smaller parts inventory for tractor equipment? Can you be interested in buying a better product for less money? If you are, Eimco tractors give you the answer. Take better labor relations — an Eimco 105 tractor operator can do more work for you with less effort.

Maintenance crews are happy to find the Eimco Tractor requires a minimum of repair. Yes, better equipment means better labor relations both of which put more dollars in your pocket.

Are you planning to buy a tractor? If so, investigation of the Eimco Tractor is a MUST before you reach any decision. Eimco invites you to see this new tractor, operate it yourself. **This is a tractor that Eimco is proud to have you inspect and compare.**

You will agree with Eimco that the quality construction justifies the liberal one year warranty on the Eimco Tractor.

If you have missed Numbers One and Two of this series, just drop Eimco a line for your free copies.

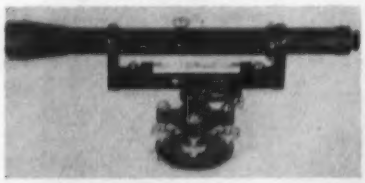
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erecting eye-piece. The transit enables surveyors to cope with any possible problem of triangulation and to obtain results of the highest accuracy. All readings are done from one position, an important time factor.—**Geo-Optic Co., Inc., 170 Broadway, New York 38, N. Y.**



HIGH ACCURACY 18-IN. DUMP LEVEL—The 32-power telescope has a minimum focus of 11.5 ft with all interior lens surfaces coated. Weight of the instrument is 9.8 lb and it sells for $225.—**Umeco Optical Div., 465 California St., San Francisco 4, Calif.**



AUTOMATIC LEVELING INSTRUMENT—An automatic leveling tool which employs no cross hairs, bubbles or leveling screws, and no focusing, is this Cowley Compactic Automatic Level. It is permanently adjusted, ready to use, and practically free from wear.—**Engis Equipment Co., Compactic Div., 431 S. Dearborn St., Chicago 5, Ill.**

Plaster Mixers

PLASTER MIXER—The No. 9 Master-Mixer takes a full two-bag batch. An adjustable axle extends to an over-all width of 46½ in. for top stability on the road, but telescopes to 35½ in. for easy passage through 36-in. doors. Power is by either a 7-hp gas engine or a 3-hp electric motor. Another model is the No. 4 Mix-Miser which is a one-bag machine designed for jobs of the room-to-room variety. Its 29½ in. over-all width allows easy passage through 30-in. doors to eliminate expensive hodding. It is powered by either a

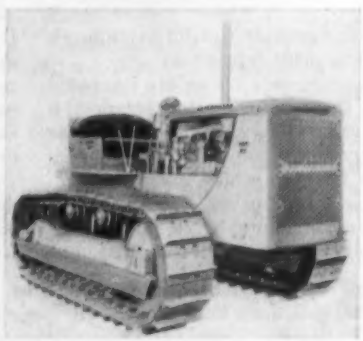


3½-hp gas engine or a 1-hp electric motor.—**The Knickerbocker Co., 651 Liberty St., Jackson, Mich.**

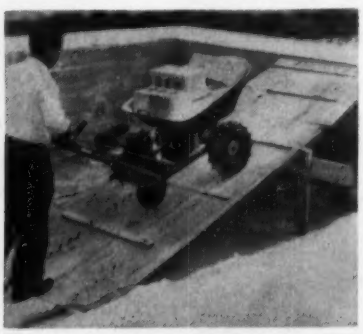


PLASTER AND MORTAR MIXER—This new 2-cu ft plaster and mortar mixer features carrying handles for ease in moving on the job and in transit. Full weight of the unit is 234 lb. Addition of an optional wheel makes it simple for one man to move, as in wheelbarrow fashion. A 1.87-hp Briggs & Stratton engine provides power for the new unit.—**Chain Belt Co., Dept. PR, Milwaukee 1, Wis.**

Miscellaneous



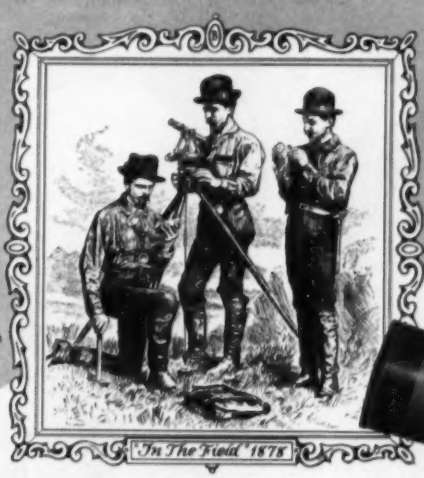
20 More Hp on New Cat D7—The new Caterpillar D7 track-type tractor, announced this month, has increased the hp to 128 at 1,200 rpm, as compared to the 108 hp at 1,000 rpm in previous models. Along with the increased hp the maximum drawbar pull has been upped to 28,700 lb—3,500 more than its predecessor. Other engineering changes included in the new model are: redesigned engine block; new fuel injection system, new starting engine, new radiator, larger fuel tank, new fuel filter system, redesigned oil filter base adapter and improved air cleaner. Featured also is a new engine balancer which reduces vibration and permits the 4-cyl engine to operate at 1,200 rpm with smoothness comparable to a 6-cyl design. The new D7 has 5 speeds forward with speeds ranging from 1.5 to 5.9 mph and 4 reverse speeds from 1.9 to 5.4 mph. —**Caterpillar Tractor Co., Peoria, Ill.**



POWERED WHEELBARROW—Another powered cart is offered to contractors. The Worthington Workhorse is a three-wheel unit with power applied to its two husky, semi-pneumatic weight-carrying wheels. Capacity is 400 lb, which load, the the maker claims, is taken up a 16% grade without hesitation by the 2½-hp, 4-cycle engine mounted over the single, swiveling rear wheel that is steered with little effort by the operator walking behind. Low loading height and easy dumping are featured. In addition to the steel tray illustrated, it is expected that other types of useful bodies will be made available.—**Worthington Mower Co., Stroudsburg, Pa.**



NEW AC SCRAPER—A 15-cu yd struck and 19-cu yd heaped capacity rubber-tired four-wheel scraper is the newest addition to the AC line. The new unit is cable-controlled and features positive forced ejection. It provides a 9-ft 8-in. wide cut with carbon steel heat-treated offset-type cutting edge. It is 33 ft 5 in. over all in length and 11 ft 6¾ in. in width. Height is 8 ft 8 in. with blade on the ground and 9 ft 2 in. when bowl is raised. Approximate weight is 25,850 lb.—**Allis-Chalmers Mfg. Co., Milwaukee, Wis.**



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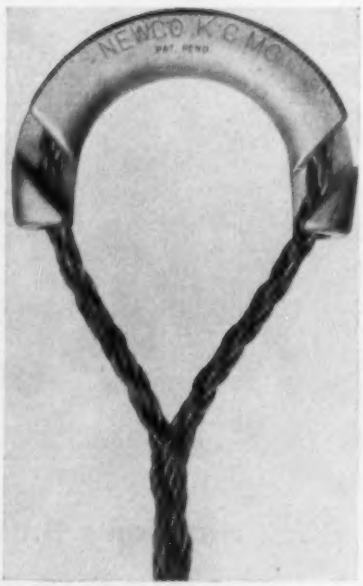
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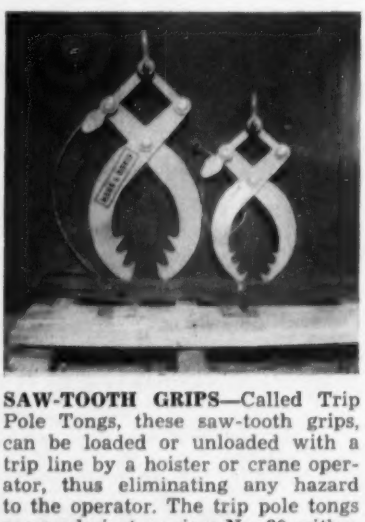
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SLIP-ON THIMBLES—The Newco slip-on thimbles are cast of manganese alloy, having a minimum tensile strength of 110,000 psi with excellent abrasion resistant properties. It is particularly recommended for preventing abrasion when a choker sling is used by slipping one eye through another. With the Newco there are no lips to bend over or rivets to peen. The design holds it fast until the operator wishes to re-use it on a new or different sling. They can be used on any size from 6 in. up, and the sizes available are ⅜, ½, ⅝, ¾, ⅞ and 1 in.—**Newman Mfg. & Sales Co., P. O. Box 5939, Kansas City 11, Mo.**



SAW-TOOTH GRIPS—Called Trip Pole Tongs, these saw-tooth grips, can be loaded or unloaded with a trip line by a hoister or crane operator, thus eliminating any hazard to the operator. The trip pole tongs are made in two sizes No. 20 with a 10,000-lb capacity and No. 30 with a 20,000-lb capacity. The smaller unit has 11½-in. opening and weighs 20 lb, while the larger unit has a 16-in. opening and weighs 30 lb.—**Hogg & Davis, 2590 E. 67th St., Long Beach, Calif.**



"Production often exceeds 32 bucket loads an hour" with the P&H Model 105 TC

Here's another example of the earning power of the P&H Model 105 TC: *Concrete handling* — cited by P. A. Thrall & Sons, general contractors of Aurora, Ill. Production on various jobs ranges from 26 to over 32 loads per hour. They say, "The limiting factor is the trucks bringing in the ready-mix."

As a trench hoe, this same machine recently dug 420 feet of 30" trench 4 feet deep in less than 5½ hours.

About maintenance: "Instead of constantly paying out money for repairs, we have spent less than $100 in the first year for parts on the whole P&H unit."*

The Model 105 TC has a 10-ton lifting capacity. It's fully convertible, of course. Get complete details from your P&H dealer.

*User's statements are taken from a certified Gould Report. Copy will be sent upon request. Write for Gould Report No. 5503. Or ask your P&H dealer.

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"Your P&H Dealer has the experience, the organization and the facilities to serve you reliably in every way. He's ready to deliver the kind of on-the-ground service that keeps your jobs moving on schedule. Your P&H Dealer is tops in the business. Get to know him."

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White gives you the most practical Universal Level-Transit on the market

HERE'S a Universal Level-Transit specially developed to handle all survey and checking operations. It's sturdy, accurate and exceptionally easy to use. And — a new single truss standard frame design replaces old-style cross bars and wyes. What's more, it has a silvered 4¼" horizontal circle and an easy to read 5 minute vernier.

Other advantages of this outstanding instrument include coated optics, internal focusing and a ball-bearing race for smooth operation even in sub-zero weather. Check out a White on your next trip and discover how much easier your work can be. Write for DAVID WHITE Bulletin 1053 and name of nearest dealer, 343 W. Court St,. Milwaukee 12, Wis.

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EQUIPMENT BRIEFS

Teale & Co., Waverly, Neb., has announced it is now manufacturing a new **scarifier** to fit small model track-type tractors, a new **angle dozer,** a new **loader,** and a new **snow-plow attachment.** This company has been improving its standard equipment by adding new items to its line during the last year and it is now ready to go with the new units.

A new **V-belt variety** has been announced by the **Flexible Steel Lacing Co.,** 4607 Lexington St., Chicago 4, Ill. With these fasteners V-belts can be made up in any length to fit any drive quickly. The fasteners will fit A, B, C and D belts.

An all metal folding **"Handy Horse"** has been announced by the **Federal Aircraft Works,** 3456 N. Washington, Minneapolis 12, Minn. It weighs only 10¼ lb and is guaranteed not to wiggle, wobble or warp under load. It retails at $5.95.

A new lighter weight, streamlined **triplex tamper** of new design of direct and balanced distribution of filtered air power has just been announced by **Thor Power Tool Co.,** Aurora, Ill. It is equipped with an air swivel connection attached directly to the air manifold replacing the former air feed through one handle to provide even distribution of air to each tamper and cooler handling.

The models D6, D4 and D2 **Caterpillar tractors** now have greater horsepower and faster engine speeds, according to a recent announcement just issued by Caterpillar. The D6 now has drawbar horsepower of 75 and rpm has been boosted to 1,600. The D4 has been increased to 48 hp with the rpm also increased to 1,600. The smallest of the line the D2 is now 38 hp and the rpm has been upped to 1,650.

The Alemite Division of Stewart-Warner Corp. has just released a slide film showing how **Alemite** fits into the construction industry. It shows all the ways a contractor lubricates with variations and is fairly compact and not too wordy a package.

Something new in **concrete finishing** is claimed by the **Haivala Concrete Float Co.,** Wichita, Kan. It's a device constructed of lightweight alloy with a corrugated working surface and is contoured to penetrate the coarse aggregate quickly below the troweling surface. They'll be glad to send you a descriptive folder on this and other products.

A new **color chart** showing engineering data for standard conveyor belt construction is now ready for distribution by **Quaker Rubber Corp.,** Div. of H. K. Porter Co., Inc., Philadelphia 24, Pa.

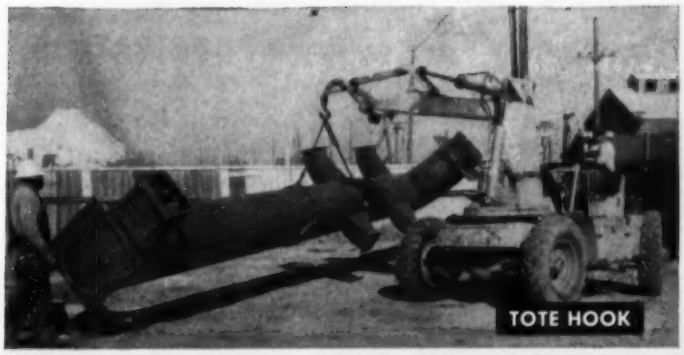
The Eagle Crusher Co. of Galion, Ohio has just announced a truck-mounted loader that is designed to meet the needs of a longer and higher conveyor. A conveyor which is 15 ft long can now be raised or lowered hydraulically.

The Industrial Relations Div. of Industrial Safety has placed into effect new tunnel safety orders which supersede the safety rules that have been in existence since 1919. The new order covers the use of new equipment and methods, such as diesel units for underground haulage; underground telephones, steel ribs in lieu of timbering and specifically designed powder cars for transporting explosives underground. The new regulation also requires an accident prevention program by each employer; the adoption and use of a code of safe practices; automatic coupling devices for all muck cars except the small dump-type. Prohibited are any electric lights near danger points such as magazines if these lights require wires leading to the danger areas.

Golden anniversaries happen only once in a lifetime and to help celebrate that event at the **Besser Mfg. Co., Alpena, Mich.** they have issued a very informative booklet titled the Besser Era Since 1904. It summarizes 50 years of concrete masonry progress and details the life and career of the president and co-founder of the company, Jesse H. Besser.

San Leandro, Calif. was the scene of a **new General Motors** Training Center opened last month to offer service training courses in all Euclid earth-moving equipment. Information and application for enrollment in future courses may be obtained from any Euclid dealer or from the Service Training Dept., Euclid Div. of General Motors Corp., Cleveland 17, Ohio.

A vibrating screen with an increase in capacity of from 30 to 40% over smaller models was unveiled at the opening of the American Mining Congress convention in San Francisco, Calif. Despite its enormous size, the screen, called Eliptex E-13, will still retain the live-action, three-way vibration built into smaller models, assuring high capacity, fast processing of material and sharp sizing. The new series will have horizontal vibrating and dewatering screens available up to 6x24 ft. in the double-deck models. It is made by the **Hewitt-Robins Inc.,** Stamford, Conn.





SWING LOADER WITH THE BOARDING-HOUSE R-E-A-C-H



180° Boom Swing Does Many Jobs No Other Loader Can Touch

Four machines in one! That's Speed Swing with the four interchangeable attachments illustrated. Unique among loaders, the 180° boom swing performs work no other loader can touch. Combined with 2 or 4 wheel steer and drive, work in tight spots is no longer a problem. Speed Swing is the most versatile machine you can own. Torque converter power, of course. The full specifications are in Bulletin P174—ask for it!



NO OTHER LOADER HAS ALL THESE FEATURES

- 180° BOOM SWING
- BALL BEARING TURNTABLE
- HIGH DISCHARGE HEIGHT
- LONG REACH
- TORQUE CONVERTER
- 2 WHEEL OR 4 WHEEL DRIVE
- HYDRAULIC STEERING
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- REPLACEABLE BUCKET LIP
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- HEAVY DUTY AXLES
- 4 WHEEL POWER BRAKES
- BIG FLOTATION TIRES
- FORWARD-REVERSING LEVER
- FULL OPERATOR VISIBILITY
- 4 WHEEL STEER OPTIONAL

PETTIBONE SPEED SWING

75 years of Pettibone heavy equipment manufacturing experience back Speed Swing. More than 300 models and sizes of over 70 construction equipment and material handling products made by the Pettibone Companies are shown in Bulletin P200. Ask for it!

Another Member of the Pettibone Labor-Saving Family!

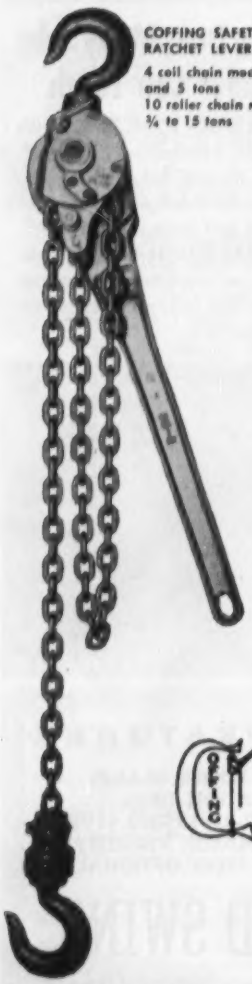
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Just as important as the time- and labor-saving advantages of Coffing Safety-Pull Ratchet Lever Hoists is the way each one protects your equipment from damage . . . your men from injury. Here's why:

Load cannot slip even if handle is accidentally released — because of dual Ratchet and Pawl principle, developed by Coffing and an outstanding Coffing advantage for over a quarter of a century.

Load is held positively at all times — there is no friction brake to slip or freeze.

Hooks will not break or straighten out.

"Safety-valve" handle will bend before any other part of hoist gives way.

Safety-Pulls are single-chain tested at 100 percent above warranted, rated capacity.

Find out more about how Coffing Safety-Pulls provide extra protection on the job. Write for Bulletin D3SP.

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New PUBLICATIONS From MANUFACTURERS

The catalogs and bulletins reviewed below will keep you posted on latest developments in construction equipment and materials available for your use.

TOURNATRACTOR — Features of the 208 hp Tournatractor is explained by use of photos, diagrams and charts. Illustrated is how the unit's range of speeds cuts minutes from the work cycle and reasons why the machine requires low maintenance and few repairs. Ask for Form 54-005-T from **LeTourneau-Westinghouse Co., Peoria, Ill.**

FIRE RESISTANCE—An interesting 4-p brochure on the Tectum fire demonstration recently held in Detroit is available by writing to the **Tectum Corp., 105 S. 6th St., Newark, Ohio.** It covers a picture story of fire preventive methods employed by Tectum with emphasis on the Tectum roof decks that are used to confine fires of conflagration intensity.

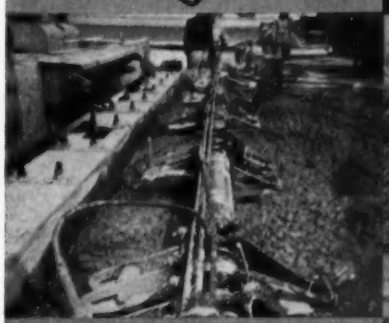
LE ROI ENGINES—A colorful bulletin describing and illustrating the 225- to 675-hp Le Roi L3460 and L4000 engines is now available. The literature shows how engines are used on various jobs, and also contains basic specifications. Copies of this bulletin may be obtained from the **Le Roi Div., Westinghouse Air Brake, 1706 S. 68th St., Milwaukee, Wis.**

MOTOR GRADER—The Adams motor grader No. 660 powered by 140-hp Cummins diesel engine is fully described in a catalog just released. The various blade positions are pictured, along with detailed views of the Adams transmission, the full-floating rear axle and detailed engine views. Optional equipment is also covered. This catalog is available from any Adams dealer or by writing **J. D. Adams Mfg. Co., Indianapolis, Ind.**

DUMP BODIES—Exclusive features of the Galion all-steel Model 12N-7 heavy-duty dump-body and matching Model 880-1000-77353 hydraulic hoist are covered in a new 4-p, two-color catalog just released. Ask for Catalog L-9886 from **The Galion All-Steel Body Co., Galion, Ohio.**

TWIN DISC FLUID COUPLINGS—Bulletin No. 144-D contains diagrams and drawings and shows how easy it is to install Twin Disc fluid couplings on any type industrial equipment. Powered by any type electric or internal combustion engine from ¾ to 850 hp. Address your request to the **Twin Disc Clutch Co., Dept. DS, Racine, Wis.**

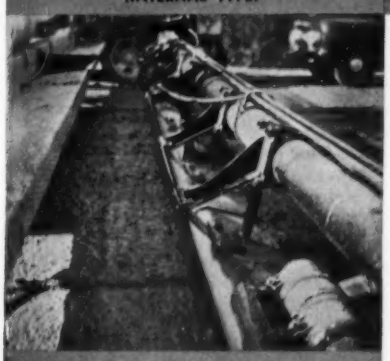
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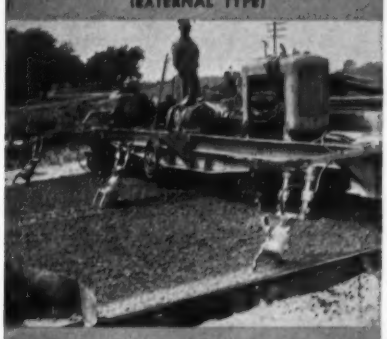
JACKSON PAVING TUBE (INTERNAL TYPE)



JACKSON MULTIPLE VIBRATORY COMPACTOR



JACKSON PAVING TUBE (EXTERNAL TYPE)



JACKSON SIDE FORM VIBRATOR



JACKSON VIBRATORY SCREED

MACADAM BASE COURSES, SUB-BASES, SOIL-CEMENT PAVING, FILLS

The JACKSON MULTIPLE COMPACTOR has now thoroughly demonstrated that it is by far the most advantageous equipment for achieving specified density in rock, slag, soilbound macadam, gravel and sand base courses. Required density in 12" base courses is usually achieved in one pass. Dry fines are vibrated to fill all voids with similar speed, and the machine is equally efficient on gravel sub-bases and granular soil-cement paving or base course construction. Standard width is 13', 3". Working speeds: up to 60 fpm. Reverse travel: 5½ mph.

CONCRETE AIRPORT & HIGHWAY PAVING

In very thick concrete slab construction, such as used in airport paving, the super powerful JACKSON PAVING TUBE, of the internal type, gives full width, full depth vibration of the concrete. Attached to a standard finisher or spreader, it saves time, cement; provides greater density and compressive strength. Controlled by finisher or spreader operator.

The surface type JACKSON PAVING TUBE does a perfect job of vibrating all mixes in depths used on highway projects. The owner of a JACKSON PAVING TUBE can quickly switch from internal to external vibration, or vice versa, and meet all specifications at minimum expense.

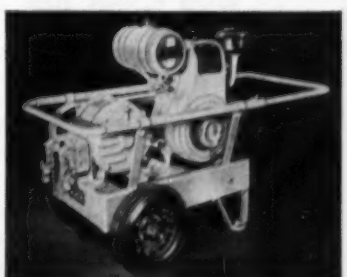
Use of a JACKSON Side Form Vibrator on standard finisher assures thorough consolidation and plasticity of concrete at side and center forms — with no "missed" spots. Labor savings effected quickly repay cost of equipment.

MUNICIPAL PAVING — BRIDGE DECKS, ETC.

For jobs of this type a JACKSON Vibratory Screed and Portable Power Plant is the most convenient, productive and inexpensive outfit you'll find anywhere. Strikes off to any crown, undercuts at curb and sideform, works right up to and around all obstructions. Two men easily handle it on all slabs up to 30 feet wide, and it may be rolled back for second passes on 4 rollers.

PORTABLE POWER:

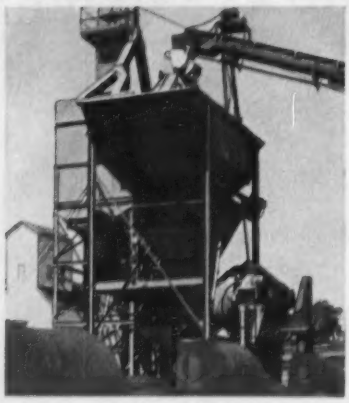
Thoroughly reliable, time-proved plants in capacities of 1.5 to 7.5 KVA . . . equipped with permanent magnet generators requiring no maintenance or adjustment. They provide both single and 3-phase 120 V., 60 Cy. AC and may be used for lights as well as operating all JACKSON equipment.



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JACKSON VIBRATORS, INC. LUDINGTON MICHIGAN

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from a Single Source

- "Tilt-Up" Mixers
- Ready-Mix Plants
- Expressway Semi-Portable Plants
- Dry Batch Plants
- Cement Bins
- Aggregate Bins
- Cement Storage

ENGINEERED TO WORK TOGETHER

From conveyor to elevator, from bin to mixer Burmeister equipment is designed and built by the same organization. Because each product is *"engineered to work together"* you are assured less costly "conversions," maximum production speed, accurate delivery of materials, and greater economy of operation. See your nearest Burmeister Distributor or write for details.

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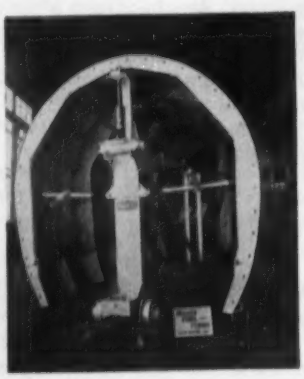
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PRESERVING CONCRETE FLOORS—Elimination of concrete "dusting" and sealing of concrete surfaces against damaging effects of grease, oil and abrasive wear is effectively accomplished by treatment of Stonhard Stontop, according to a new pocket-size folder just released. You can get a copy of this interesting booklet from the **Stonhard Co., 1306 Spring Garden St., Philadelphia 23, Pa.**

NEW SERVICE BOOKLET—"Protection of Profits" is the title of a publication designed to help equipment owners acquaint themselves with the latest service equipment, preventive maintenance practices and methods that may be used to speed up emergency field service. Copies of this Form D484 may be obtained from **Caterpillar Tractor Co., Peoria 8, Ill.**

A new piece of literature titled "Useful Attachments for Payloader Tractor Shovels" has just been released by **The Frank G. Hough Co., 757 N. Broadway, Milwaukee 2, Wis.** It completely describes sixteen attachments that are available for the seven sizes of Payloader tractor shovels.

SPEEDYLECTRIC LITERATURE—The Speedylectric hydrasteam jet cleaner is described in a new bulletin just released by the **Livingstone Engineering Co., 100 Grove St., Worcester, Mass.** This heavy-duty all-electric pipe cleaner propels a solid jet of superheated water and detergent for fast removal of grease deposits and soil encrustations is particularly useful for cleaning in areas where flammable materials are handled.

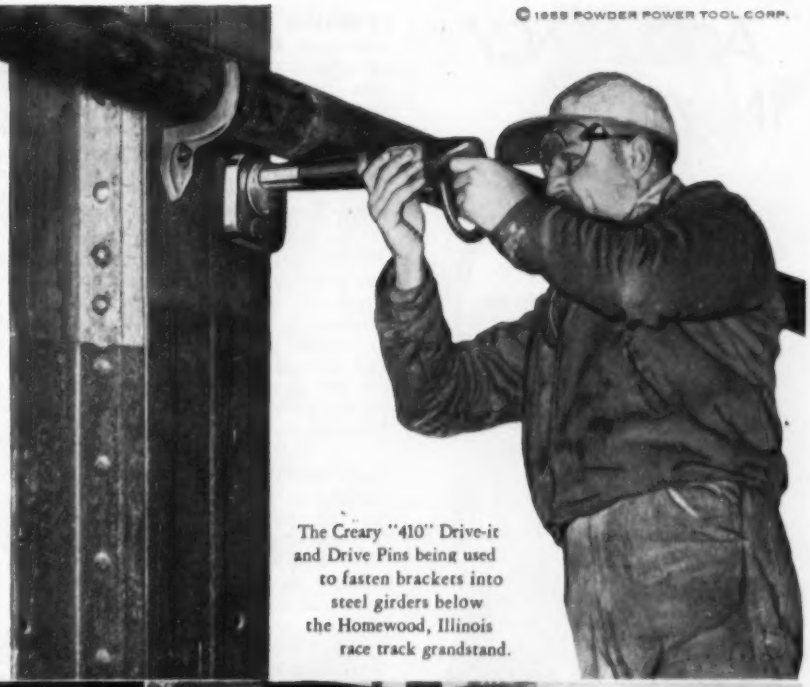
GURLEY TRANSITS—A 16-p booklet titled "Adjustment of Gurley Transits" has been published to aid engineers and surveyors in the most effective use of their field instruments. It includes information on the general care of the transit, along with detailed sections on adjustments of the various basic parts of the instrument. Copies of this booklet may be obtained from the **W. & L. E. Gurley Engineering Instruments Div., Troy, N. Y.**

CONSTRUCTION MIXERS — **The Koehring Co., of** Milwaukee, Wis., has just issued a colorful 16-p catalog describing mechanical and application features of its line of modern volume-production concrete mixers. This line of mixers in the 1- to 4-cu yd capacity category are used primarily in construction work. A breakdown of the structural features of each type mixer is included, along with a liberal number of photos showing actual mixer installations on commercial projects. When writing for this interesting catalog ask for Form K390.

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WHAM!

–and it's fastened in steel or concrete with the



The Creary "410" Drive-it and Drive Pins being used to fasten brackets into steel girders below the Homewood, Illinois race track grandstand.

pioneer cartridge-powered fastening tool

Creary POWDER POWER Drive-It





Let the Creary *Drive-it* cut your fastening costs in half, when you make permanent fastenings in steel or concrete. Imagine the time and money savings, when you make a fastening every 15 seconds!

8 reasons why Creary DRIVE-IT speeds up construction, reduces on-the-job costs

1. Two cartridge-powered tools for light, or heavy jobs. The new Creary "330" Drive-It (.25 cal.); the heavy-duty Creary "410" Drive-It (.38 cal.)

2. Snap-open action for fast loading and ejection. Greatest operating speed of any cartridge-powered tool.

3. Requires only one standard power load for all fastening jobs. No need to buy different strength cartridges for each job.

4. Automatic cartridge extraction when breech is snapped open. Gives more fastenings per minute.

5. Safety in firing, as Drive-It must be pressed firmly against the work surface before tool can be fired.

6. Steel encased rubber guard completely surrounds work area. Another of the many safety and convenience features which make Creary Drive-It the choice of contractors everywhere.

7. Barrel extension allows fastening in recessed areas such as junction boxes, deep channel iron, and other confined spaces.

8. Creary Drive-pins are U. L. approved, will penetrate up to an inch of structural steel and withstood a 10,000 lb. pullout test by Pittsburgh Testing Laboratories.

WRITE FOR FREE CATALOG AND CREARY DRIVE-PIN SAMPLE

POWDER POWER TOOL CORP., 7534 S. W. Macadam Ave., Portland, Oregon

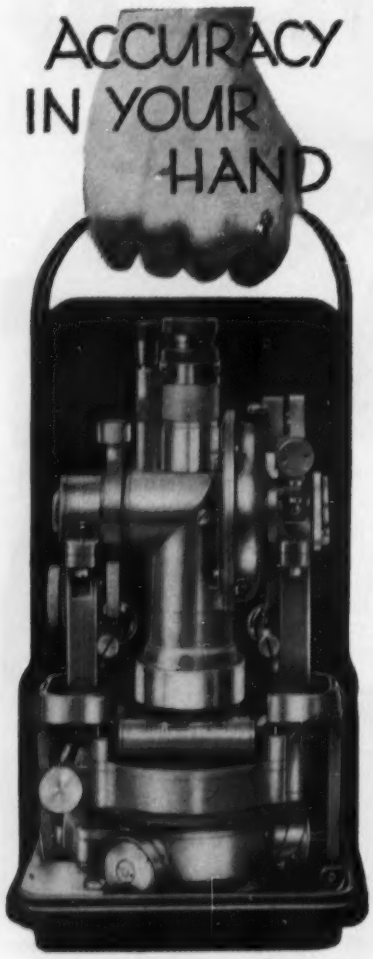
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one second Theodolite f. Triangulation, big construction and Engineering Operation.

FAST DIRECT READING
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is highly portable. Weight 6 lbs. Height 7" including Metal Case.

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CUMMINS MAGAZINE — If you would like to see a copy of Cummins external house organ, "The Dependable Diesel," which shows Cummins diesels at work in a wide variety of applications throughout the country, write to **Cummins Engine Co., Inc., Columbus, Ind.**

DEEP-HOLE PERCUSSION DRILLING—Application data on deep-hole drilling with percussion rock drills has been published for the convenience of contractors engaged in rock excavation. In the booklet 13 pages of original application drawings suggest some of the varied uses for this efficient drilling method. Copies of the booklet are available free from **Gardner-Denver Co., Quincy, Ill.**

BITUMINOUS FINISHER—A new catolog on the Model 879-A finisher features a natural color photograph of the unit on its front cover and devotes 6 pp to pictures of the finisher at work in a wide range of applications and locations. Simplified drawings are employed to illustrate the machine's principles of automatic leveling and thickness control; tamping compaction and control of crown and super-elevation. You may obtain a copy of this catalog from any Barber-Greene distributor or by writing directly to **Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.**

SCALPING AND CRUSHING PLANT—A new bulletin on Telsmith single-pass scalping and crushing plant has just been published by **Smith Engineering Works, Milwaukee, Wis.** This highly mobile unit for producing low-cost road-building aggregate can be moved quickly and easily from job to job. It is simple to operate and can be controlled from the ground or from the operator's platform.

WIRE ROPE ASSEMBLIES—A catalog titled "Macwhyte Safe-Lock Wire-Rope assemblies" shows a wide variety of applications. Among the different types of items covered are bright and galvanized carbon steel, stainless steel and monel metal used for the wire rope. Stainless steel terminals, mild carbon steel and drop-forged steel terminals are swaged to the ends of the rope, making a fastening stronger than the cable itself. Catalog number is 5201 and make your request to **Macwhyte Co., Kenosha, Wis.**

ALLIS-CHALMERS HD-9 TRACTOR—A brand-new catalog describing the features of the Allis-Chalmers HD-9 diesel - powered crawler tractor contains 30 pp of illustrations, and the engineering, mechanical and operating story of the HD-9. Also covered are allied equipment and special accessories. Make your request to the **Allis-Chalmers Mfg. Co., Milwaukee 1, Wis.**

SAFETY BOOKLET—Welding and cutting operators who are handling acetylene, oxyacetylene and arc-welding equipment and are interested in safety should obtain a copy of this new 32-p booklet which gives safety precautions and rules for personal safety, the handling and maintenance of cylinders, torches, regulators and hoses and also lists safe practices in setting up, adjusting, using and shutting down of the equipment. You can get a copy of this informative booklet from **Air Reduction Sales Co., 60 E. 42nd St., New York 17, N. Y.**

FULLER TRANSMISSION HELP—To help equipment owners obtain maximum performance and longer wear life from Fuller transmissions, the manufacturer has just released a new lubrication recommendation folder which defines the basic functions of transmission lubricants and describes the types and seasonal grades recommended. If you would like to have a copy of this folder, you are invited to write **Fuller Mfg. Co., Kalamazoo, Mich.**

MORE SERVICE LIFE WITH HARD-SURFACING—Complete information as to types of alloy to use, preparation, welding and finishing procedures for hard-surfacing equipment and parts is shown in the new Victor Hard-Surfacing Manual recently released. This booklet with 45 pp and 126 illustrations in loose-leaf form covers equipment commonly used in the brick and clay industry, cement, coal mining, dredging, earth moving, metal mining and rock products. To obtain a copy of this up-to-date manual simply write to the **Victor Equipment Co., Alloy Rod & Metal Div., 11440 S. Alameda St., Los Angeles 59, Calif.**

GRADALL BULLETIN—Just issued is the first of a new series of application bulletins designed to show contractors the wide variety of jobs that the Gradall handles in various fields of construction work. This bulletin uses the photograph story technique and describes more than 30 different construction jobs in the general industrial highway construction field.—**The Gradall Division of The Warner & Swasey Co., Cleveland, Ohio.**

POWER GIANT—A 6-p brochure describing the new Power Giant Power Units being manufactured by Willys Motors, Inc., is now available. Complete specifications of engines, standard equipment and housing are given. The data includes horsepower, torque and fuel consumption figures of 4 and 6-cyl Power Giant engines. You can get a copy of this booklet by writing to the **Industrial Engine Dept., Willys Motors, Inc., 1050 North Cove Blvd., Toledo, Ohio.**

Look under the hood!



On now – Truck Event of the Year –

HOODS UP SHOWDOWN!

A new type short-stroke engine design is revolutionizing truck performance. Ford, and only Ford has it in every model!

It's the automotive news of the year! First the car industry goes short-stroke V-8. Now the truck industry begins to follow suit. Small wonder! This new engine design increases piston ring life up to 53% . . . saves up to 1 gallon of gas in 7 . . . reduces engine friction as much as 33% for *more* usable power . . . gives longer engine life.



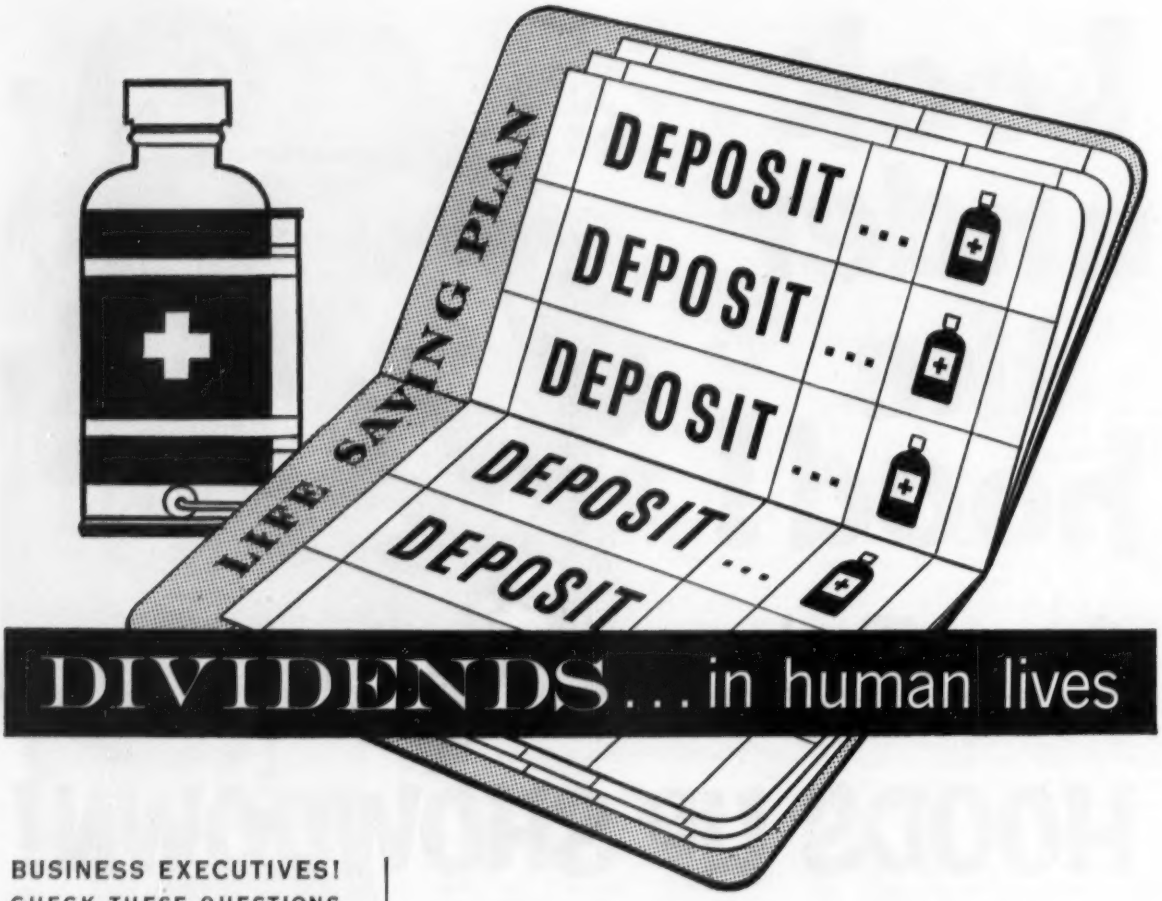
Short Stroke power to roll the heaviest loads on long or short hauls with amazing speed and economy. New Ford T-800 Tandem Axle BIG JOB with 170-h.p. Short Stroke V-8. Power Steering *standard*. New 11,000-lb. front axle at extra cost. 40,000 lbs. GVW, 60,000 lbs. GCW.

Ford—pioneer in V-8 truck power—has had Short Stroke V-8's on the road for three years. Today, *only* Ford offers an "on-the-job" tested, money-saving Short Stroke engine in *any* truck model you choose . . . with 4 Short Stroke V-8's and a Short Stroke Six.

Look under the hood! Be sure your next truck doesn't have an old-type, *long-stroke* engine that may be outdated before it earns its keep. Get the facts at your Ford Dealer's Hoods Up Showdown . . . now!

FORD Triple Economy TRUCKS

THE MONEY MAKERS FOR '55



DIVIDENDS... in human lives

BUSINESS EXECUTIVES!

CHECK THESE QUESTIONS

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ◯ HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS?
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- ◯ DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- ◯ HAVE YOU ARRANGED TO HAVE A BLOOD-MOBILE MAKE REGULAR VISITS?
- ◯ HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM?
- ◯ HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- ◯ WAS THIS INFORMATION GIVEN THROUGH PLAN BULLETIN OR HOUSE MAGAZINE?
- ◯ HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- ◯ HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a **single** pint of blood may mean the difference between life and death for **any** American . . . the need for blood is **urgent!**

NATIONAL BLOOD PROGRAM

America's blood bank needs **more** blood, **now**. Be a regular depositor and know that your dividend is saving a life of some American—somewhere.

It may be a soldier shot down in battle, suffering from **shock**. Or someone here at home, sick and in dire need of new blood to restore life. A mother in childbirth, or a child in an accident.

America must give. America is **you**. Won't you call your Red Cross, Armed Forces or Community Blood Donor Center right now, for an appointment?

GIVE BLOOD

...give it again and again

Solve Your Forming Problems

With The Form Service That "Licked" the DAUPHIN BRIDGE JOB

Blount Brothers used specially designed ATLAS STEEL FORMS to cut their concrete costs.

There is no one answer to concrete forming problems but our experience and recommendations, plus the 65 different types of easily erected concrete forms which we sell or rent, have helped contractors in almost every state of the Union in economy and construction procedure.

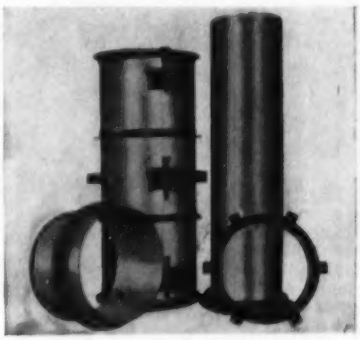
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SOME TYPICAL ATLAS JOBS

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FORM & TANK CORPORATION

ATLAS FORM DIVISION

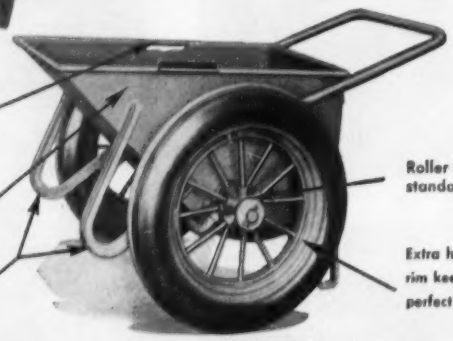
20 Vesey Street, New York, N. Y.

STERLING CARTS
For Wheeling Concrete and other Materials

IT STANDS ALONE



Investigate the unusually sturdy construction of this perfectly balanced cart. It's the best that money can buy. Outlives any other cart. That's why it costs less. Choice of 30" dia. steel wheels or pneumatics. Illustration shows No. 626-PR Cart with dumping rockers and pneumatic tires, 6 cu. ft. capacity, water full. Eight other models. Write for Catalog.



Top edge reinforced with continuous ½" dia. butt-welded rod.

Tray is made of 14 gauge steel.

1¼" T-iron dumping rockers.

Roller bearings are standard equipment.

Extra heavy steel rim keeps wheel in perfect alignment.

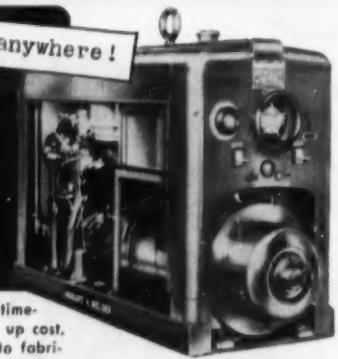
STERLING WHEELBARROW CO., Milwaukee 14, Wis.

Look for this Mark of STERLING Quality

Sterling WHEELBARROWS

Cut Welding Costs with this Contractor Special welder

Welds anywhere!



Do the job faster, better with Hobart. You'll avoid time-consuming breakdowns that delay the job and roll up cost.

Hobart Gas Drive Welders are used anywhere to fabricate steel or repair equipment. No need for power—they provide their own. A type and size for every construction job—large or small.

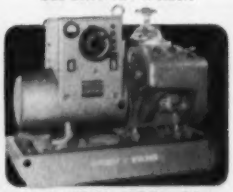
Many contractors standardize on the 250 amp "Contractor Special." A full capacity 250-ampere welder, yet compact and lightweight for easy moving from job to job.

Others like the combination AC Arc Welder and AC Stand-by Power Unit. Welds or powers lights, tools.

For extra heavy duty welding, contractors favor the Hobart DC Gas Drive Welders ranging up to 600-ampere capacity with many combinations of auxiliary power.

Check and return the coupon today for complete details!

"Contractor Special" 250-amp Gas Drive Arc Welder.



AC Arc Welder-AC Stand-by Power Unit.



Heavy duty Gas Drive DC Arc Welder.

HOBART TROY OHIO WELDERS

Tear off and MAIL TODAY!

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Without obligation, please send information on items checked.

☐ "Contractor Special" DC Gas Drive Welders ☐ AC Arc Welder-AC Power Unit ☐ Electrode samples for_____

NAME_____ POSITION_____

FIRM_____

ADDRESS_____

BIG JOBS OF THE MONTH . . .

Continued from page 22

Co., of Indiana and Sinclair Refining Co., 910 S. Michigan Ave., Chicago 5. $10,000,000.

S. A. Healy & Gargaro Co., 40 E. Seven-Mile Road, Detroit, Mich. Four sewer contracts for the city of Detroit, Dept of Public Works, Guardian Bldg., Detroit 26, Mich. $7,927,000.

Dravo Corp., Neville Island, Pittsburgh, Pa. Contract No. 3 for construction of substructure of river crossing for Greater New Orleans Bridge over Mississippi River, New Orleans, for the Mississippi River Bridge Authority, $6,651,590.

Hilp & Rhodes, 16th and Kansas Sts., San Francisco, Calif. Shopping center, Willow Pass Road Extension, Concord, Calif. for Concord Investment Corp., c/o Coldwell, Banker & Co., 425 15th St., Oakland, Calif. $5,000,000.

Morrison-Knudsen Co., Inc., 319 Broadway, Boise, Idaho. Airfield paving and lighting, Fairchild Airforce Base, Spokane, Wash. for U. S. Engineers, 4735 E. Marginal Way, Seattle 4, Wash. $4,797,802.

Ballenger Paving Co., P.O. Box 927, Greenville, S.C. Airfield paving at Hunter Air Force Base for the U. S. Engineers, 200 East St. Julian St., Savannah, Ga. $4,194,-005.

Nolan Bros., Inc., Box 9157, Grants Lane, Fort Worth, Tex., Airfield pavement, etc. at Sherman-Clinton Air Force Base, Clinton, Okla. for Bureau of Yards & Docks, Dept. Navy, 8th Naval District, Bldg. 16, Naval Station, New Orleans (Algiers) La. $4,127,454.

Peter Kiewit Sons Co. & Condon-Cunningham Co., 229½ W. Washington St., Indianapolis, Ind. Contracts C-13 and C-14, Indiana East-West Toll Road in Porter County, for Indiana Toll Road Comm., 309 W. Washington St., Indianapolis, 4. $3,994,031.

L. G. DeFelice & Son, Inc., Nettleton Ave., North Haven, Conn. highway and bridge construction, Warren, Brimfield and Sturbridge, for the Massachusetts, Turnpike Authority, 80 Boylston St., Boston, Mass. $3,487,231.



This construction photograph, showing Bethlehem 2-in.-round Hollow Drill Steel mounted in drills, emphasizes the rugged rock formations confronting contractors Slate & Hall, Portland, Ore. The drill steel was reconditioned by Westland Equipment, Portland.

Moving 1,272,000 cu yd of Rock for New Highway in Northwest

There's a lot of formidable rock-covered country along the south bank of the Columbia River, east of The Dalles, Oregon. And removing it was no easy task, as drilling crews learned quickly when initiating a contract for the relocation of 7 miles of U. S. Route 30. Biting into the high bluffs to make blast holes up to 100 ft deep, the contractors used 24-ft lengths of 2-in.-round Bethlehem Hollow Drill Steel, fitted with carbide-insert bits.

This contract, part of the gigantic project under the supervision of the Corps of Engineers, Portland District, U. S. Army, is required by the construction of the 8500-ft-long The Dalles Dam. Upon completion of the contract, some 1,272,000 cu yd of very hard and medium-hard Columbia basalt will have been excavated.

Bethlehem 2-in.-round Hollow Drill Steel is an outstanding steel for deep-hole drilling because of its toughness and long service life. Analyzing 0.80 carbon, it is a fatigue-resisting steel with which large bits are used, permitting maximum rock-removal with fewer holes.

It is usually furnished in lengths of 22 ft and 32 ft, and has a ¾-in. centered hole which is both smooth and true. The steel can be easily forged and heat-treated, and has a wide quenching range. It's a good steel to keep in mind whenever deep-rock drilling is scheduled.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

How THORITE *patches and* THOROSEAL *seals concrete structure of building and give it that new look!*

Abrasive Products Company
Braintree, Massachusetts







1 Before patching with Thorite, loose concrete is removed and rust cleaned from reinforcing rods.

2 Thorite is then applied, bringing patch to surrounding surface. THORITE will not shrink.

3 A coat of Thoroseal is then given the patched section and all exposed concrete of similar areas. This building has been restored to its original structural lines and protected from further deterioration.



THOROSEAL seals water out as it beautifies the masonry surface.



Get our pictorially-described literature in detail "HOW TO DO IT."

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NEW EAGLE, PENNSYLVANIA

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Versatile "D" heaps load with help of small 66 dhp tractor. Rig can also self-load effectively in most materials. Two machines, using own dozer blades or push-plates, can quickly load each other.

Work in close quarters
Make sharp turns
Climb steep banks



After spreading on levee, units travel down bank to canal. Sharp turns are easily negotiated with "D's" ability to turn around non-stop in space only 26' wide.



2 Tournapulls, owned by Jordan, Ruff & Spurlock of Hayward, California, relocate Livermore Canal in Alameda County. "Can't beat these machines on this type of work," say the owners.

Owner records, covering the first 20 working days, or ⅔ of the 60,000 yard, 1½ mile state-sponsored excavation project, show excellent production for their two side-boarded 7-yard D Tournapulls.

Average 150 yds. hourly on 1000′ hauls

On average 2000′ cycles — hauling along the canal bottom, up a steep bank, and spreading on top of a levee — each Tournapull delivered a load every 4½ to 5½ minutes. Owners estimate loads in the dry clay material ran around 6½ to 7 pay yards each. Production per machine on the 1000′ hauls averaged 10 to 12 loads per 55-minute hour...combined hourly output for the 2 machines varied from 130 to 168 pay yards. Most of the time during the 200 working hours studied, when hauls were somewhat shorter than 1000′, owners figure combined hourly output was almost exactly 200 pay yards.

"You just can't beat Tournapulls for this type of work," is the conclusion of Jordan, Ruff and Spurlock. "The 'D's' work fast in close quarters, make sharp turns, produce well, and at low cost."

Drive job-to-job at speeds to 28 mph

Another advantage of these 140 hp machines is their job-to-job mobility. A typical 50-mile trip through city and country traffic takes about 2 hours. Top speed is 28 mph. No trailers are needed, no loading, no blocking . . . "D's" go everywhere under their own power.

You, too, can save time and make more money with D Tournapull's high-speed, rubber-tired mobility and production ability. For proof, see your LeTourneau-Westinghouse Distributor. Ask for a demonstration . . . find out first-hand how the versatile "D" can make money on one-man, one-machine dirtmoving, or as a production tool in pusher fleets.

Tournapull—Trademark Reg. U.S. Pat. Off. DP-721-D-b

A Subsidiary of Westinghouse Air Brake Company

LeTourneau-Westinghouse Company

PEORIA, ILLINOIS

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Welding *when* and *where* you want it!

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Gasoline Engine Driven A.C. Arc Welder & Power Plant

ARC SPOT miller GENERATORS WELDERS

Designed to furnish all welding and power requirements under field conditions, or where local electric power supplies are inadequate or erratic. Delivers 200 amperes of A.C. welding current or 4500 watts of A.C. power; changeover made by a convenient double-throw switch. Also provides 1000 watts of D.C. power (110 volts) for auxiliary universal tools or lights while welding. Powered by famous Onan Model CK 2-cylinder, 4-cycle engine. Easily lifted and carried—weighs only 435 lbs.—or may be mounted on portable running gear or road towing trailer. Handles A.C. or A.C.-D.C. electrodes from 1/16" to 3/16" inclusive.

ASK US FOR FULL DETAILS TODAY!

Manufacturers of quality electric arc and spot welders since 1929.

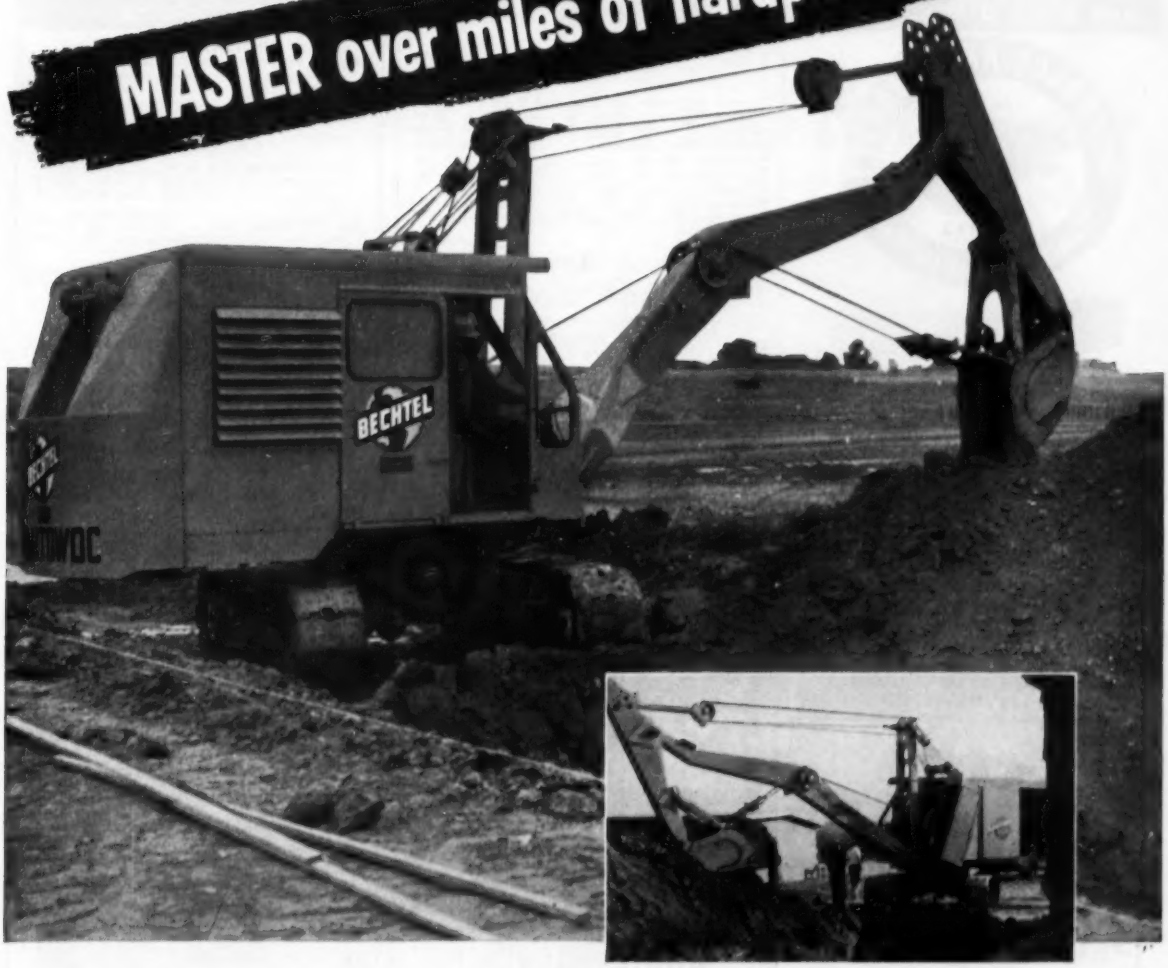
miller Electric Manufacturing Co., Inc.

Appleton, Wisconsin



Manitowoc...

MASTER over miles of hardpan



2 Manitowoc One-Yard Hoes lick tough hardpan on refinery job for BECHTEL CORP. at Anacortes, Washington

When the going got rough and other units scratched, picked and hacked to the tune of lost time and low production — it was time to bring in the Manitowocs!

The two "1600" hoes waded in and the hardpan took a pasting. Mile after mile, these "work horses" dug in — 25 ft. deep at times — and came up with full dippers of pay dirt every time.

The trench had to be 9 ft. wide in many spots and Manitowoc's boom strength and stability enabled it to trim trench edges clean and neat without traveling. This superior feature — plus Manitowoc's 37' reach resulted in no lost motion and more miles of trench per shift.

Need a big-producing hoe? Get the facts on the Manitowoc 1600. Manitowoc Engineering Corp., Manitowoc, Wis.

MANITOWOC

SHOVELS 1-5 YD. Speedcrane CRANES 20-100 TON

Surveying experts favor

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"NITAC" — World's only level with split bubble, erect image. One of many super-fine levels, transits, theodolites, made by Fennel's old-world craftsmen. Performance-proved in 58 countries. Send for particulars, prices.

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Dealers in principal cities

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Special 4x6 Steam Fixed Drum Winch. Duty single line pull 4,300 lbs. at 90 FPM.

Superior-Lidgerwood-Mundy has the facilities and experience to meet them . . . either from an all-inclusive line of standard hoisting equipment or with equipment engineered to your specific requirements.

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SUPERIOR LIDGERWOOD MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Day Street, New York 7, N. Y.

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EMPLOYMENT

POSITION WANTED

CONSTRUCTION SUPERINTENDENT, eighteen years experience with contracting firms on Federal Government, N. Y. & Conn. State public buildings now available. References can be furnished. Reply PW-5603, Construction Methods.

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For Sale

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DESIGN ENGR

An Eastern manufacturer of heavy equipment for construction and quarrying operations has an opening for an engineer with experience in the design of crawler type machinery. Should be a graduate engineer with 5 yrs' exp in this type of work. Salary open.
Engineering Employment Service (Assy)
217 Broadway — New York City

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Fast, easy way to
CUT WIRE ROPE
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MONTGOMERY MFG. CO.
24Y Austin St., Newark 5, N.J.
Dealers wanted



ENGINEERS—FOREMEN—OFFICE MEN
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
411 5th Ave., Lake Worth, Florida

FOR SALE

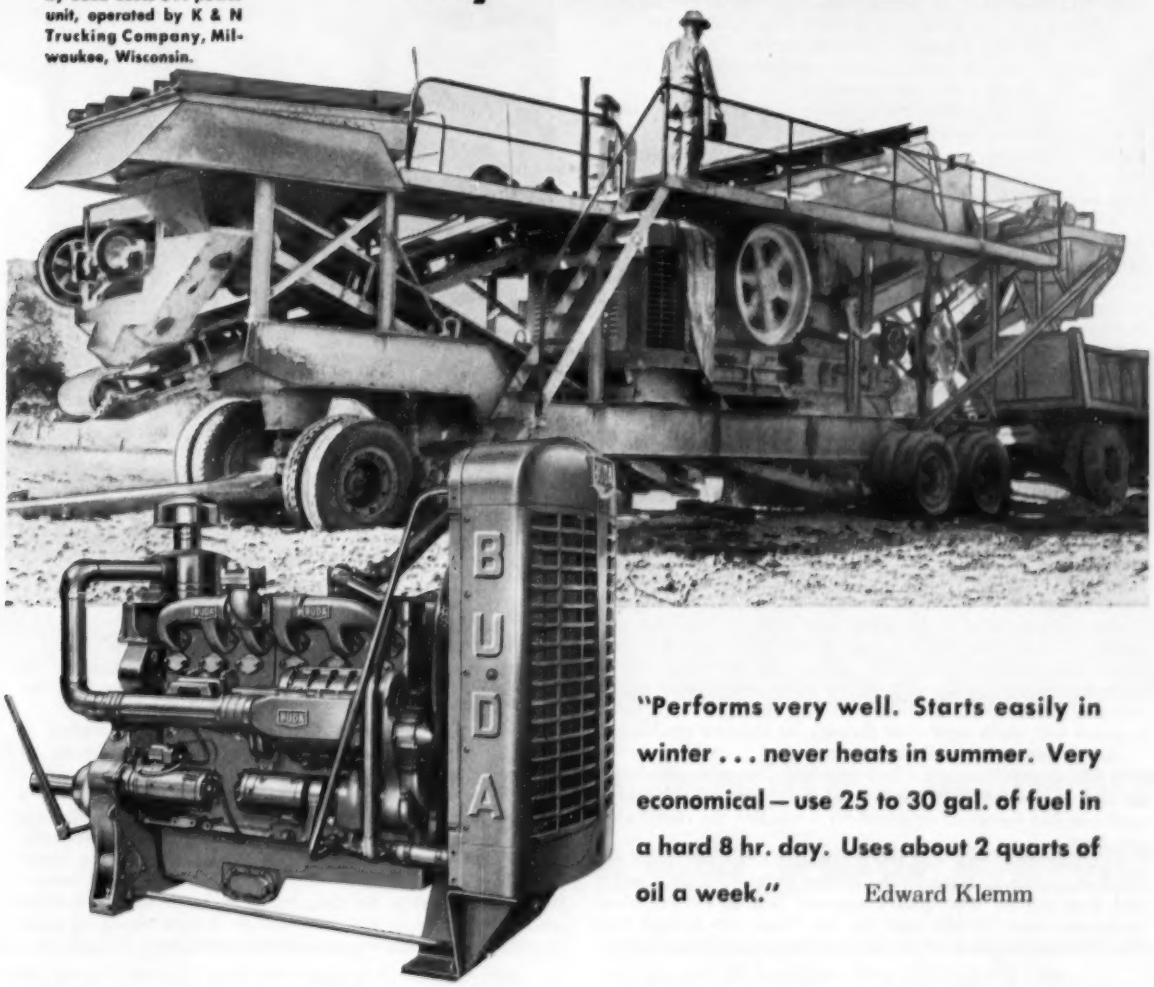
Standard Gauge 30 ton McMyler Interstate Locomotive Crane complete with 55' boom, outriggers, etc. Thoroughly reconditioned this year and equipped with new 165 H.P. Model HRIP-600 Cummins diesel engine, 15 KVA magneto generator, etc. Undercarriage complies with interstate rail travel requirements. Crane now is in service using 1½ cu. yd. bucket and 55" dia. magnet at our new Barge Terminal, 2905 South Western Avenue, Chicago, and may be inspected by appointment. This new Terminal is designed for caterpillar equipment operations which have proved adequate. Price $24,500.00, where and as is.

NORTH PIER TERMINAL CO.
W. W. Huggett
509 East Illinois St., Chicago 11, Illinois
Superior 7-5606

"Best Engine I Ever Used"—

Says this Buda Diesel Owner

Lippman Crusher powered by Buda 6DAS-844 power unit, operated by K & N Trucking Company, Milwaukee, Wisconsin.



"Performs very well. Starts easily in winter . . . never heats in summer. Very economical—use 25 to 30 gal. of fuel in a hard 8 hr. day. Uses about 2 quarts of oil a week." Edward Klemm

Mr. Edward Klemm, owner of K&N Trucking Company is "high" on his Buda Diesel because it gives him the power, economy and trouble-free performance he needs for profitable operation. Buda Diesels are BIG DISPLACEMENT engines —they give extra horsepower, higher torque and are built to stand the gaff of tough service in all types of construction equipment.

Buda Diesel Engines are made in sizes from 5 to 510 horsepower in fan-to-flywheel and power unit types. There is a Buda engine made for every need . . . and every Buda Diesel is powered for profitable operation.

See your nearby Buda Distributor for details on Buda power for any of your equipment. Write for Bulletins and Specifications.

BUDA Division
ALLIS-CHALMERS MANUFACTURING COMPANY
Harvey, Illinois

Methods Memo . . .

Lady at the Tunnel

TECELOTE TUNNEL was holed through in mid-January after five years' work. The 6.4-mi, 7-ft dia bore near Santa Barbara, Calif., had been beset by delays because of lots of hot water—up to 116 deg F and 9,100 gpm (CM&E, June, 1954, p 54). The holing through was a personal triumph for Al Coker, of Coker Construction Co., who headed a joint venture with Peter Kiewit Sons Co. to complete the job successfully.

Larry Wise, CM&E West Coast editor, who was first newsman in the tunnel when work was resumed early in 1954 after a long shutdown, attended the holing-through ceremonies, accompanied by his wife. For a woman's viewpoint of a tough construction job, here are some of Helen Wise's comments:

"While Al Coker, Larry and other officials and newsmen were in the tunnel after the final blast, I talked to Mrs. Coker. I was surprised to learn that she had never been this close to a tunnel job and probably wouldn't have come to the holing-through ceremonies except that wives of USBR and local civic officials were to attend. It seems that old-time tunnel workers are superstitious about women in or near a tunnel. Traditionally they quit the job if a woman comes near the tunnel operations. Mrs. Coker said that when she and Al were first married, she went to a tunnel job to meet Al at the end of a shift. He was so upset that he wouldn't speak to her for a month.

"The Cokers weren't sure a year ago whether they could keep a roof over their heads and continue eating a steady diet of Wheaties. Apparently Al Coker had risked almost everything he had on the job. But judging from the party he threw that night for all his tunnel workers, their wives, and visiting officials, the job was a smashing success financially, as well as otherwise.

"I also talked with H. E. Carleton, a Coker Construction Co. vice-president, and an old-time tunnel man. In his short speech during the ceremonies he likened himself to the old sled dog that could no longer pull his share of the load and was turned loose—so he ran behind the sled and barked. Mr. Carleton said he worked in tunnels for 40 years without an accident. But at a shaft job near Green River, Wyo., not too long ago, someone dropped a plumb bob which went clear through his shoulder resulting in a partial permanent paralysis.

"I had expected to see the holing-through ceremonies conducted by men in business suits, but most of them wore yellow slickers, hard-hats and boots—all equipped for a trip into the tunnel after the blast.

"An interesting gag was told by master of ceremonies E. R. Crocker, project manager for the Bureau of Reclamation. Crocker had been worried over Coker's apparent lack of concern about manpower when he took over the job. Then men arrived from Coker's Eklutna tunnel job in Alaska, where, according to Crocker, they had been frozen stiff. They worked in the heat of Tecolote Tunnel for six weeks before they thawed out and realized it was hot.



HELEN WISE at Tecelote Tunnel. Old timers would be shocked.

"Another cute gimmick at the holing through was to have the switch for the final blast pulled by a 5-year old boy who had been born the day the first tunnel blast was fired. We could not hear the blast, but we did see visible effects of it when the streamers at the portal which had been blowing away from the tunnel, reversed their direction a few seconds later.

"The contractors weren't the only ones to be wreathed in smiles at completion of the tough excavation job. Bureau of Reclamation officials like L. N. McClellan and Grant Bloodgood had a hard time restraining their elation at completion of a job that, for a while, looked nearly impossible. And Santa Barbara County Supervisors and water district officials were overjoyed, even though the more than $4 million extra cost of the tunnel would have to be repaid by their constituents. Now local farmers are assured of water for their lemon groves. And city dwellers are no longer faced with a repeat of drought-period water-use restrictions that outlawed car washing and lawn sprinkling."

IF YOU PLAN to purchase a chain saw, you can have it insured against losses for one full year as a part of the original purchase plan, according to a recent announcement of The Mall Tool Co., Chicago. An insurance certificate is packaged with each saw, and all the purchaser does is fill it out and mail to the insurance company. Loss by theft or damage from falling trees or limbs are covered under a $25 deductible arrangement.

So far as we know, this is the first time such a plan has been attempted, and it should be interesting to see how it works out, especially the $25 theft clause.

POWERIZATION is a term you may hear frequently in the future, as related to the operation of controls on construction equipment. More and more the operator need flip only small levers and hydraulic, pneumatic or electric boosters spring into action to control a mechanical operation. Whether steering, braking, loading or dumping—on many large machines—the operator merely controls a collection of oil pumps. Although his efforts are indirect and probably multiplied many times, he remains in firm and precise control of the job and gets more work done. And he is a happier worker, too. Men no longer want (nor need) to earn a living through excessive physical exertion.

THE WEATHER was so good in Phoenix, Ariz. the Stewart Construction Co. decided to stay.

Engaged to construct the First National Bank Building at Phoenix, M. Seth Horne, president of the James Stewart & Co. and its parent company, James Stewart and Co. Inc., New York, moved his family to Phoenix and will set up a headquarters office for all jobs in the Far West and Midwest.

"I like the climate and living here." Horne explained. The firm will have offices in the First National Bank.

built in
1941
concrete in excellent condition



↑ Kansas City Water Softening Plant, Kansas City, Mo. Engrs.—Burns & McDonnell Engr. Co. and Black & Veatch Engr. Co.; Contr.—S. Patti Constr. Co.—all of Kansas City, Mo.

↓ $900,000 Addition. Engrs.—Burns & McDonnell Engr. Co.; Contr.—Interstate Constr. Co., both of Kansas City, Mo.; Ready-Mixed Concrete Supplied by Concrete Materials Co., Kansas City, Kan.

addition in
1954
same sound practice followed



*concrete designed for quality...economy with minimum unit water content

When the Kansas City Water Softening Plant was built in 1941, every means was employed to obtain the highest quality concrete most economically. Today's excellent condition of this 13-year old plant testifies to the success of the builders' efforts.

Pozzolith was one of the means used to get these results. Through dispersion of cement it was an aid in producing ***lowest unit water content.*** The soundness of this practice is shown in the following, from U. S. Bureau of Reclamation Concrete Manual:

"For a given set of materials and water-cement ratio, the unit water content (water required per cubic yard of concrete) is the most important basic factor affecting the quality of concrete". (Page 130, 5th Edition.)

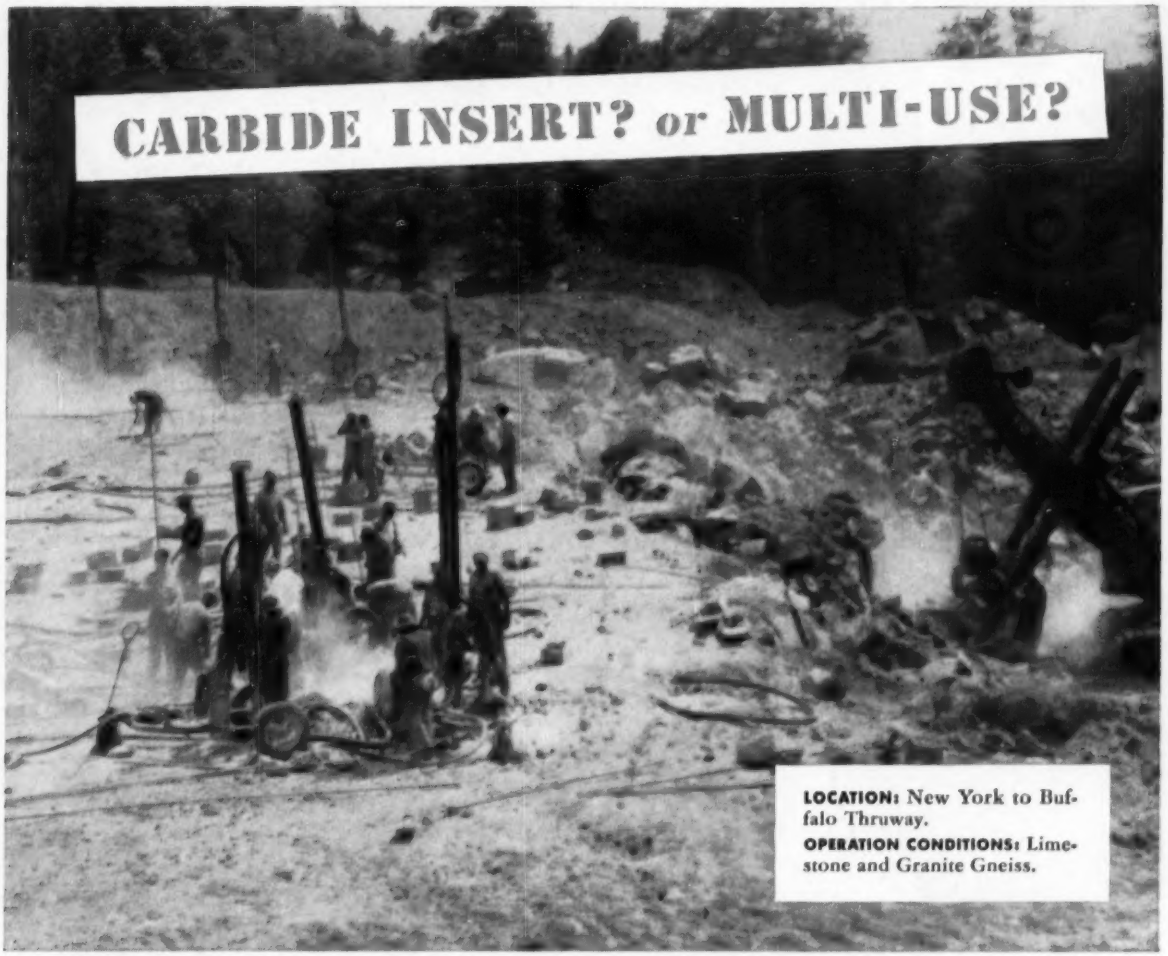
Information showing how Pozzolith will help obtain the qualities you want in concrete sent on request.

POZZOLITH...

the cement-dispersing, water-reducing agent developed by The Master Builders Co. in 1932, makes available the optimum amount of air in concrete and fully complies with the water-cement ratio law. Added at the mixer.

The MASTER BUILDERS Co

Subsidiary of American-Marietta Company



Rusciano & Son Corporation drills faster on New York Thruway with TIMKEN® carbide insert bits

IN drilling extremely deep holes in limestone and granite gneiss on the New York to Buffalo Thruway job, Rusciano & Son Corporation increased drilling speed and reduced bit changes by using Timken® carbide insert bits.

Timken carbide insert bits are most economical for constant-gage holes, small diameter blast holes and very deep holes. They're also the best bet for highest speed through the hard and abrasive ground that was met on the New York Thruway job.

But they may *not* always be the best bet for *all* drilling problems.

In drilling ordinary ground, Timken multi-use bits are most economical! With correct and controlled reconditioning, they give you lowest cost per foot of hole when full increments of steel can be drilled.

Most important of all, both Timken carbide insert and multi-use bits are interchangeable in the same thread series. A wide range of different Timken bits fit the same drill steel. You change bits quickly, easily as the ground changes—right on the job!

Both Timken carbide insert and multi-use bits are made from electric furnace Timken fine alloy steel and have special shoulder unions, originated by the Timken Company, that protect threads from drilling impact.

To find out the bit type most suited to your drilling needs, call on the Timken Rock Bit Engineering Service. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".



Timken multi-use rock bit



Timken carbide insert rock bit

your best bet for the best bit ... for every job

TIMKEN

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